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14. ABSTRACT The South Texas Veterans Health Care System (STVHCS) and Wilford Hall Medical Center (WHMC) submitted a concept-proposal requesting funds from the Department of Defense (DoD) and Department of Veterans Affairs (VA) for a jointly staffed six-bed intensive care unit (ICU) at WHMC. The STVHCS can recruit and hire critical care nurses but has inadequate ICU bed capacity while WHMC has available ICU beds but insufficient nursing staff due to military deployments.  The purpose of the research project was to analyze the ICU proposal to determine if it would meet the objectives outlined in the incentive fund concept-proposal. The researcher completed a detailed narrative business plan and business case analysis, which demonstrated that the project would be financially self-sustaining by the end of the 2-year funding.  The STVHCS and WHMC should implement the joint ICU if incentive funds are awarded. The addition of a joint VA and DoD ICU at WHMC can meet the objectives of the incentive fund proposal by reducing diversions to community hospitals, maintaining the status of WHMC as a Level I Trauma Center, optimizing graduate medical education opportunities, and improving continuity of care for VA and DoD patients.					
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Running head: ANALYSIS OF A JOINT VA/DOD INTENSIVE CARE UNIT

Analysis of a Joint Department of Veterans Affairs and  
Department of Defense Intensive Care Unit

A Graduate Management Project Submitted in Partial Fulfillment  
of Requirements for the  
U.S. Army - Baylor University Graduate Program in Healthcare  
Administration  
September 2004

By  
Danna Malone  
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## Abstract

The South Texas Veterans Health Care System (STVHCS) and Wilford Hall Medical Center (WHMC) submitted a concept-proposal requesting funds from the Department of Defense (DoD) and Department of Veterans Affairs (VA) for a jointly staffed six-bed intensive care unit (ICU) at WHMC. The STVHCS can recruit and hire critical care nurses but has inadequate ICU bed capacity while WHMC has available ICU beds but insufficient nursing staff due to military deployments.

The purpose of the research project was to analyze the ICU proposal to determine if it would meet the objectives outlined in the incentive fund concept-proposal. The researcher completed a detailed narrative business plan and business case analysis, which demonstrated that the project would be financially self-sustaining by the end of the 2-year funding.

The STVHCS and WHMC should implement the joint ICU if incentive funds are awarded. The addition of a joint VA and DoD ICU at WHMC can meet the objectives of the incentive fund proposal by reducing diversions to community hospitals, maintaining the status of WHMC as a Level I Trauma Center, optimizing graduate medical education opportunities, and improving continuity of care for VA and DoD patients.

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\* The Appendices (except Appendix H) are existing VA/DoD documents and are presented with only slight modifications in their original format.

Analysis of a Joint Department of Veterans Affairs and  
Department of Defense Intensive Care Unit

The South Texas Veterans Health Care System (STVHCS), Wilford Hall Medical Center (WHMC), Brooke Army Medical Center (BAMC), and other Department of Defense (DoD) health care facilities in San Antonio and South Texas are actively pursuing multiple strategies for sharing resources to better serve veterans and other DoD beneficiaries. On December 8, 2004, the STVHCS Director, the WHMC Commander, and the BAMC Commander met to discuss and share ideas for resource sharing. At that meeting, the three administrators agreed to establish a charter and to have routine meetings in support of improving federal health care resource sharing between the three health care systems. The charter for the newly formed San Antonio Federal Health Consortium was signed on January 15, 2004 (Minutes of San Antonio Federal Health Consortium, February 17, 2004). The consortium meets monthly with the goal of identifying opportunities to effectively utilize federal resources to provide health care for Department of Veterans Affairs (VA) and DoD beneficiaries, to better serve beneficiaries, and to achieve cost savings through resource sharing. The opportunities for sharing projects have been strengthened in the past year with the availability of national funding for local initiatives.

The Bob Stump National Defense Authorization Act for Fiscal Year 2003 (2002) directed the DoD and the VA to establish a program to provide incentive funding in support of creative DoD and VA sharing initiatives. Each department is required to



contribute \$15 million annually to the fund starting in fiscal year (FY) 2004 and through FY 2007. In the fall of 2003, the Deputy Assistant Secretary of Defense, Health Budgets and Financial Policy, and the Veterans Health Administration (VHA) Chief Financial Officer issued the first request for FY 2004 incentive fund concept-proposals (N.M. Ford & J.A. Norris, memorandum, October 10, 2003). The South Texas Veterans Health Care System and WHMC submitted an incentive fund concept-proposal on January 9, 2004 for resources required to implement a jointly staffed intensive care unit at WHMC, which will serve both VA and DoD patients (see Appendix A).

#### *Conditions that Prompted the Study*

The President's Task Force to Improve Health Care Delivery for Our Nation's Veterans released its final report in May 2003 (Wilensky et al., 2003). The report highlights a growing disparity between VA demand and capability, which is also reflective of the current situation at the STVHCS. While the overall number of veterans eligible for care in the VA is decreasing, the actual number of beneficiaries requesting care is growing. Following the passage of the Veterans' Health Care Eligibility Reform Act (1996), the VA's mission moved from primarily treating veterans with service-connected injuries and disabilities and indigent veterans to offering comprehensive health care to all enrolled veterans. Subsequently, the Millennium Health Care and Benefits Act (1999) further increased demand by expanding benefits. At the same time, the VA has been dismantling much of its tertiary care to provide primary care,

ambulatory care, and preventive services to its beneficiaries (Wilensky et al.). In an effort to meet all of these converging forces, the Audie L. Murphy Division of the STVHCS has converted much of its tertiary care space to be used for other important services and is now extremely space constrained. In addition, many of the rooms in the hospital are undersized for today's modern technology and yet still hold four patients. Planned construction should alleviate some of these issues through the addition of progressive care beds, but it will not be completed until 2007 - 2008.

The Audie L. Murphy Division of the STVHCS has inadequate intensive care capacity to meet current needs. Therefore, patients are frequently diverted to private sector hospitals in San Antonio. These diversions result in increased costs. For the first five months of FY 2004, the STVHCS was billed \$820,800 for patient care provided at private sector facilities due to bed diversions. The hospital was on diversion for 50 days or 37.3% of total days from October 2003 to February 11, 2004. As of February 11, 2004, diversion had required 1167 bed days of private care in FY 2004. The costs associated with diversions are continually increasing as seen in Figure 1. In addition to the expense, diversions also disrupt the continuity of care for veterans.

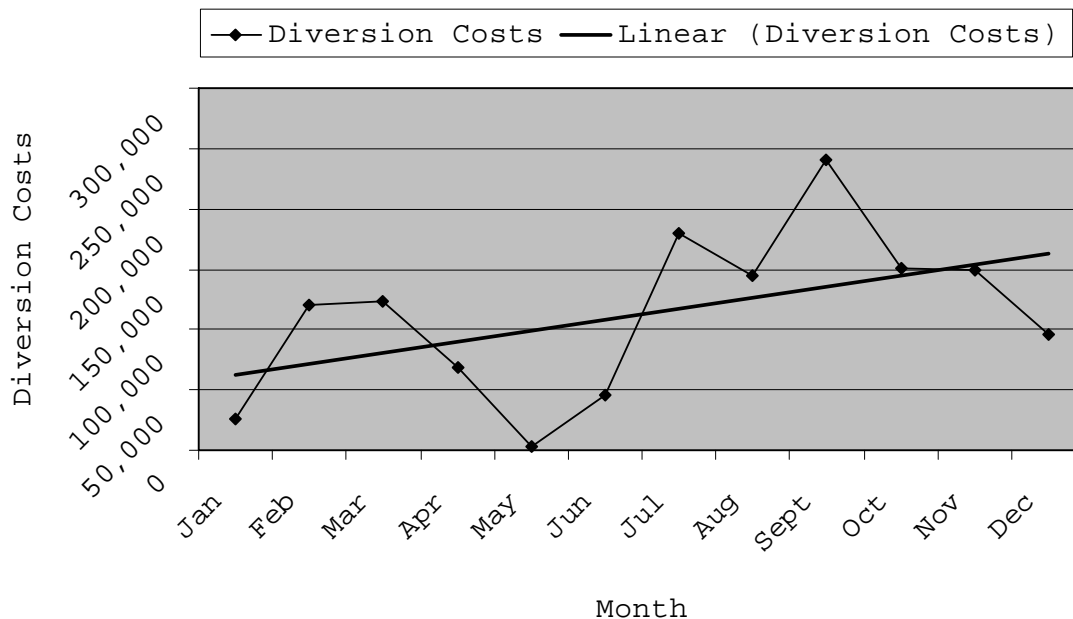


Figure 1. Estimated Cost of Diversions for STVHCS in 2003.

Wilford Hall Medical Center currently operates 26 intensive care unit (ICU) beds but has the capacity to operate 42. Deployment of nursing staff and technicians in support of contingency operations has led to the inactivation of 16 ICU beds. Since October 2002, the diversion rate for adult trauma at WHMC has increased significantly from less than 5%, which is the maximum allowable by the American College of Surgeons, to 12% (see Figure 2). The 5% diversion rate was identified in the Verification and Consultation Program for Hospitals package that was sent out by American College of Surgeons prior to its recertification visit at WHMC in 2001 (B.J. Cramer, email communication, April 29, 2004). Additionally, with the reduced number of available ICU beds, the total number of trauma cases for FY 2003 was approximately 927 as compared to the 1,200

trauma admissions required for re-verification by the American College of Surgeons (Committee on Trauma, 1998). The increased diversion rate and the shortfall of trauma cases could have a significant impact on the status of WHMC as a Level I Trauma Center at the next American College of Surgeons recertification visit in 2004.

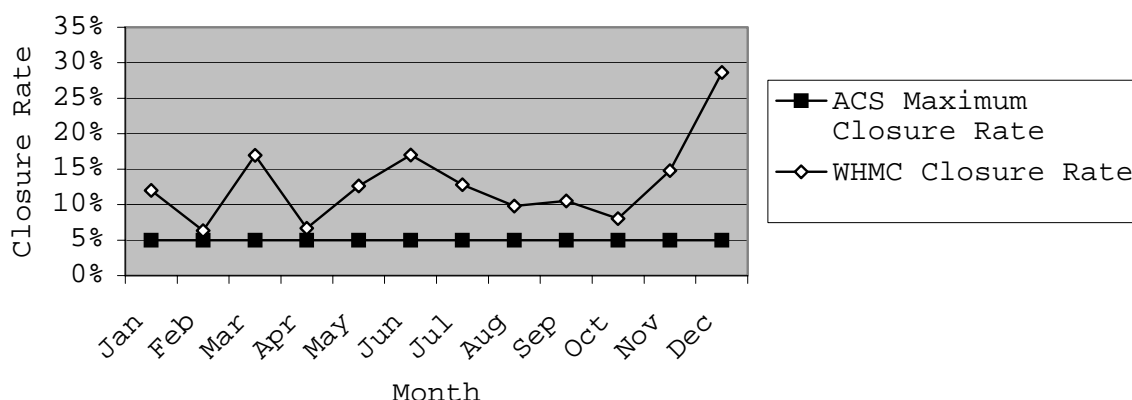


Figure 2. Estimated Bed Closures for WHMC in 2003.

The incentive fund concept-proposal was based on the premise that the STVHCS has the ability to recruit and hire intensive care nurses while WHMC has ICU beds available for use. Therefore, the two facilities proposed that the STVHCS provide VA nurses to staff a six-bed ICU at WHMC. Physicians and all other necessary staff would be provided by WHMC using the existing workforce. Both VA and DoD patients would be admitted to the ICU. Rather than diverting patients to private sector hospitals, the STVHCS would divert patients as necessary to WHMC. Diverted VA patients would be admitted to ICU and/or non-ICU beds as appropriate for the patient's medical condition. WHMC would agree to care for the VA patients while gaining

additional ICU bed capacity for DoD beneficiaries. The addition of the six-bed ICU would lessen the need for WHMC diversions.

On April 1, 2004, the STVHCS and WHMC were notified by the Director of the VA Medical Sharing Office and co-chair of the incentive fund selection committee that the concept-proposal was accepted to proceed to the second level of review for funding (Quicker, R., email communication, April 1, 2004). The two facilities were required to complete and submit a detailed business plan and business case analysis by May 21, 2004 for final review and approval for funding.

#### *Statement of the Question*

Can the addition of a joint VA and DoD ICU at WHMC reduce diversions to community hospitals, better utilize federal resources, and meet the objectives outlined in the incentive fund concept-proposal?

#### Literature Review

##### *VA and DoD Sharing*

The emphasis on VA and DoD sharing began with the enactment of the Veterans Administration and Department of Defense Health Resources Sharing and Emergency Operations Act (1982), known as the Sharing Act. The Sharing Act was intended to encourage the two agencies to share health care resources at a time when VA and DoD facilities operated in virtual isolation. The law removed legal barriers and provided incentives for local and national sharing agreements and joint ventures. Specifically, the Sharing Act enabled the local military treatment facilities and VA medical centers to negotiate and establish sharing

agreements without excessive interference from the national level. To encourage sharing initiatives, local facilities are allowed under this law to retain money earned from local VA and DoD sharing agreements.

Eighteen years after passage of the Sharing Act, a General Accounting Office (GAO) review of the status of VA and DoD resource sharing was presented in testimony before the House of Representatives Subcommittee on Health, Committee on Veterans Affairs (VA and Defense Health Care, 2000). The GAO study revealed that, although benefits were reaped from VA and DoD partnerships, the majority of those gains were from a small number of sharing agreements at a limited number of VA and DoD facilities. Actual benefits included increased revenue, operational efficiencies, and reduced costs. Among the obstacles to sharing identified by the GAO report were incompatible reimbursement and financial policies, cumbersome and lengthy approval processes for sharing agreements, limitations under TRICARE contracts, and changes in the health care environment due to the shift to managed care. The report recommended that the Secretary of Veterans Affairs and the Secretary of Defense jointly evaluate the best way to improve health care resource sharing between the two agencies.

On May 28, 2001, President George W. Bush created the President's Task Force to Improve Health Care for Our Nation's Veterans through Exec. Order No. 13,214 (2001). The mission of the President's Task Force was to:

1. Identify ways to improve benefits and services for VA beneficiaries and military retirees eligible for VA benefits by better cooperation between VA and DoD.
2. Assess challenges to VA and DoD coordination and identify opportunities to improve business practices and delivery of health care through collaborative efforts.
3. Identify opportunities for resource sharing between the two agencies.

The 15-member President's Task Force began its work in October 2001 (Butler, 2001). At that time, the co-chair reiterated the President's belief that more progress was needed in the area of VA and DoD sharing. The emphasis of the task force was high quality and cost effective health care for veterans.

In June 2001, testimony presented before the House Armed Services Subcommittee on Military Personnel reinforced the concern that the two agencies were not making substantial progress in sharing resources (Mientka, 2001). The Acting Assistant Secretary of Defense for Health Affairs and the Veterans Affairs Under Secretary for Health both agreed that progress had been modest since the passage of the Sharing Act and acknowledged that numerous obstacles existed. Although the two reported that hundreds of sharing agreements were in place, they could not agree on the actual number of agreements due to differences in accounting and financial systems.

More recent testimony reinforces the need for concerted efforts at coordinating VA and DoD resources. A staff report to the House of Representatives Committee on Veterans' Affairs in February 2002 reviewed the status of resource sharing between the two agencies (Department of Veterans' Affairs and Department of Defense, 2002). Of the more than 400 sharing agreements between VA and DoD health care facilities, 75% of \$62 million in sharing came from only 30 sites. In addition, approximately 75% of shared inpatient care was provided at only 12 sites. The staff reported on a 2001 site visit to San Antonio, Texas, which included a review of sharing efforts between the STVHCS, WHMC, and BAMC. While the combined budgets of the three exceeded \$700 million, revenue from DoD sharing was less than \$700,000. The staff report recommended that VA and DoD commence demonstration projects to enhance coordination and that Congress consider legislation to fund demonstration projects, require joint management systems, empower the Secretaries to waive regulatory and administrative barriers, and require VA and DoD resource sharing.

In a statement on March 7, 2002 before the U.S. House of Representatives Subcommittee on Military Personnel, Committee on Armed Services, and the Subcommittee on Health, Committee on Veterans' Affairs, the VA Deputy Secretary acknowledged that more work needed to be done, while citing examples of the progress made (VA-DoD Health Care Sharing, 2002). Successes reported were joint development of clinical practice guidelines, combined patient safety initiatives, and joint procurement of



pharmaceuticals. Future initiatives were aimed at better integration of health information systems, improved capital asset planning, and increased local resource sharing. At that time, 165 VA medical centers had at least one sharing agreement with a DoD facility, primarily covering diagnostic or ancillary services. However, the Deputy Secretary admitted that sharing between VA and DoD was actually on the decline. Local sharing agreements decreased from almost 1,000 in FY 1998 to 604 in FY 2001. Total VA purchases from DoD in FY 1999 were \$23.9 million but fell to \$20.4 million in FY 2001. Some of the decrease in VA and DoD sharing was attributed to DoD's TRICARE managed care support contract program.

According to the Deputy Secretary's testimony, joint ventures between medical facilities are another mechanism for reducing costs, improving access to care, and minimizing duplication of efforts (VA-DoD Health Care Sharing, 2002). In 2002, there were eight VA and DoD joint venture sites, which provided shared services in outpatient and inpatient settings.

The President's Task Force to Improve Health Care Delivery for Our Nation's Veterans presented its initial findings in July 2002 in an interim report, followed by 23 specific recommendations in a final report (Wilensky et al., 2003). The task force prefaced its recommendations with its growing concern about the disparity between the VA's budget and its ability to provide care to its beneficiary population.

The report acknowledged that the VA does not have sufficient funds to meet the demands of the enrolled veteran

population and that failure to provide adequate funds threatens the quality of VA health care (Wilensky et al., 2003). It also noted that the number of veterans seeking health care is expected to grow even though the number of veterans eligible for care is projected to decline. Wilensky et al. state that two important drivers of this dilemma are the lack of Medicare pharmacy benefits and passage of the Veterans' Health Care Eligibility Reform Act of 1996. According to the President's Task Force report, many veterans seek care in the VA system in order to obtain prescription medications at a low cost. At the same time, the Veterans' Health Care Eligibility Reform Act (1996) moved the VA from caring primarily for low income veterans and veterans with service-connected injuries to treating almost all enrolled veterans.

The 23 specific recommendations included in the final report of the President's Task Force were grouped under four broad recommendations (Wilensky et al., 2003). First, both agencies must provide committed and clear leadership to achieve the necessary collaboration to improve health care. Second, the VA and the DoD must develop a mechanism to effectively share information to facilitate a service member's transition from active duty benefits and health care to enrollment and care in the VA. Third, the two agencies must remove the barriers to VA and DoD sharing. Fourth, the disparity in funding and demand for VA's services must be addressed and resolved by Congress and the Administration.

One of the strongest initiatives to further VA and DoD sharing resulted from the formation of a VA/DoD Joint Executive Council in 2002 (Mackay & Chu, 2003). The Joint Executive Council was the result of a meeting of the co-chairs of two previously chartered groups, the Health Executive Council and the Benefits Executive Council, as well as other senior VA and DoD leaders. In 1997, the Under Secretary for Health for Veterans Affairs and the Assistant Secretary of Defense for Health Affairs chartered the VA/DoD Health Executive Council to establish cooperative programs to reduce costs and improve health care for both VA and DoD beneficiaries. In January 2002, a VA/DoD Benefits Executive Council was formed to improve processing of claims for benefits. The goal of the initial meeting between these two councils was to further efforts at VA and DoD coordination and to remove obstacles to cooperation between the two agencies. The Joint Executive Council was established as a result of the meeting.

The Joint Executive Council promptly initiated a strategic planning effort and the VA/DoD Joint Strategic Plan was published in April 2003 (Mackay & Chu, 2003). The mission of the strategic planning initiative was "to improve the quality, efficiency and effectiveness of the delivery of benefits and services to veterans, service members, military retirees and their families through an enhanced VA and DoD partnership" (Mackay & Chu, p. 1). The Joint Strategic Plan identified six strategic goals: (a) leadership commitment and accountability, (b) high quality health care, (c) seamless coordination of

benefits, (d) integrated information sharing, (e) efficiency of operations, and (f) joint contingency/readiness capabilities.

The second strategic goal addresses the need to improve access and quality of health care delivery through the use of VA and DoD partnerships and sharing agreements. Goal 2.3.3 specifically speaks to the joint incentive fund established by the Bob Stump National Defense Authorization Act for Fiscal Year 2003 (2002). To encourage further development of sharing agreements, the strategic plan directs the Health Executive Council to assess legal and financial implications of the incentive fund, establish criteria to administer the program, establish targets for increased sharing, and implement a business case analysis process to evaluate the impact of sharing agreements.

Not only does the Bob Stump National Defense Authorization Act for Fiscal Year 2003 (2002) establish the incentive fund program, it mandates coordination and sharing of health care resources between VA and DoD. This policy shift is in contrast to the Veterans Administration and Department of Defense Health Resources Sharing and Emergency Operations Act (1982), which simply encouraged sharing and sought to remove obstacles. The Bob Stump National Defense Authorization Act for Fiscal Year 2003 states:

The Secretary of Veterans Affairs and the Secretary of Defense shall enter into agreements and contracts for the mutually beneficial coordination, use, or exchange of use of the health care resources of the Department of Veterans

Affairs and the Department of Defense with the goal of improving the access to, and quality and cost effectiveness of, the health care provided by the Veterans Health Administration and the Military Health System to the beneficiaries of both Departments. (p. 2589)

The law also requires the Secretaries of Defense and Veterans Affairs to actively pursue resource sharing, mandates the formation of the Health Executive Council, establishes the joint incentive fund, requires development of guidelines and policies for sharing, and mandates an annual report be submitted to Congress. In addition, it requires the two departments to implement a health care resource and sharing demonstration project, which tests coordinated management systems.

With VA and DoD sharing initiatives under intense scrutiny, the Health Executive Council was re-chartered on August 23, 2003 and new members were appointed to the council (R.H. Roswell, memorandum, October 16, 2003). The charter, which established the purpose, composition, and responsibilities of the council, is the current governing document for the council. The emphasis of the charter is to institutionalize VA and DoD sharing in an effort to improve health care and more efficiently utilize federal resources. In addition, the council is charged with removing barriers, which inhibit sharing at local levels and to improve business processes between the two agencies. In an effort to speed progress, the Health Executive Council meets bi-monthly and the co-chairs can call additional meetings as needed.

*Registered Nurses - Supply and Demand*

The number of registered nurses (RNs) in the United States is decreasing steadily, and supply is not expected to keep pace with demand in the foreseeable future (National Center for Health Workforce Analysis, 2002). According to the National Center for Health Workforce Analysis, the nursing shortage was not expected to begin until 2007 but was evident as early as 2000. There were 1.89 million RNs in the workforce in 2000, while the demand for RNs was 2 million, representing a shortage of 110,000 nurses. The disparity between supply and demand is projected to accelerate by 2010 and the shortage could grow to 20% by 2015 and 29% by 2020 (National Center for Health Workforce Analysis).

Shortages of nurses are often cyclical but the current shortage is not typical of previous experiences (Janiszewski, 2003). According to Janiszewski, there are four primary factors contributing to the current nursing shortage. First, the workforce is aging. Second, fewer people are choosing nursing as a career. Third, the work environment is changing as the health care industry changes. Fourth, many people have a negative image of nursing as a career.

A report by the National Center for Health Workforce Analysis (2002) attributes the overall shortage of RNs to factors related to both increased demand and decreased supply. Drivers of demand include the U.S. population growth, an aging population, more highly technical medical care requiring the

skills of RNs, increased demand for health care, and trends in health care insurance and reimbursement.

Factors cited by the National Center for Health Workforce Analysis (2002) as contributing to the diminished supply of RNs are fewer numbers of nursing graduates, an aging workforce, decreased relative earnings, and alternative job opportunities. Cost reduction strategies employed by hospitals are given as another factor that adds to the problem. According to the report, there were 26% fewer RN graduates in 2000 than in 1995 with declines seen in diploma, associate degree, and baccalaureate degree programs. Although actual salaries for RNs have increased, the relative earnings adjusted for inflation have remained steady so that nurses have not seen an appreciable gain in purchasing power for 9 years. The aging of the RN workforce is created by a combination of factors to include fewer people entering the profession, higher average age of new RNs, and aging of RNs already in the workplace. As hospitals struggle to contain costs, nurses complain of low levels of staffing, heavy workloads, and increasing job dissatisfaction according to the American College of Surgeons (2004). With mounting dissatisfaction, more RNs seek alternate employment. In 2000, the number of RNs employed in fields other than nursing was 490,000 (National Center for Health Workforce Analysis).

Not all states experienced a shortage of RNs in 2000 (National Center for Health Workforce Analysis, 2002). Thirty states were identified as having a nursing shortage of 3% or greater. By 2020, all but six states are projected to be

experiencing a nursing shortage. For 2000, the shortage of nurses in Texas was approximately 9% and is expected to grow to 11% by 2010, 17% by 2015, and 26% by 2020.

Although civilian hospitals are experiencing difficulties in recruiting and retaining nurses, the situation in military hospitals is even more daunting (Advisory Board, 2002). Although salaries for DoD nurse are competitive, military nurses must commit to a specific number of years of service and can be deployed anywhere in the world. In 2002, the Air Force missed its goals for the recruitment of nurses for the third year in a row. The percentage of RNs who stay in the Air Force after 4 years is 70% but only 40% after 8 years and 31% after 10 years of service. In recent years, the war on terrorism has adversely affected the military's nursing shortage. Deployments have created a situation where more reservists and civilians are used in military treatment facilities. However, it takes a significant amount of time to notify, mobilize, and train reservists.

Another important factor in a hospital's ability to adequately staff a patient unit is the length of time required to recruit nurses. In a survey of 186 hospitals in 38 states conducted in 2001, Cavouras (2002) found that the process of recruitment is taking more time than ever. According to the survey, approximately 13.3 weeks were needed to hire a medical/surgical nurse in 2001 compared to 10.5 weeks in 2000. The time required to hire specialty nurses increased from 14 weeks in 2000 to 16.6 weeks in 2001. In response to this



situation, more hospitals are using hiring and referral bonuses, scholarship programs, retention bonuses, relocation assistance, weekend and/or night shift differentials, over hiring, and other strategies to attract nurses.

### *Staffing of Nurses*

One of the dilemmas for nurse managers is the development of an effective method for staffing patient units. Not only is there controversy over the best model for quantifying staffing, there is no national database that reports levels of staffing of nurses or that can be used to benchmark staffing in hospitals (Page, 2004). Data that distinguish staffing based on type of patient care unit (e.g. administrative, managerial, or direct care nurses) and on the number of inpatient versus outpatient nurses would be valuable in development of models for staffing in hospitals but are not available on a national basis. The limited number of studies that are available show that staffing varies considerably from facility to facility.

The Institute of Medicine published a report on the work environment of nurses, which underscored inconsistencies in staffing in hospitals (Page, 2004). It revealed that staffing of ICU nurses in 52 hospitals in California ranges from one RN for every 0.5 to 5.3 patients while medical/surgical units range from one RN for every 2.7 to 13.8 patients. It also indicated that data from a 2002 national convenience sampling show that there is significant variation in staffing of nurses from hospital to hospital as well as by shift. However, staffing on ICUs remains relatively constant by shift, with an average ratio

of one nurse to two patients on both day and night shifts. The report concluded that staffing of one nurse to two patients have a positive effect on patient care. In summary, the report emphasized that there is wide variation in levels of staffing of nurses in hospitals, even with the mounting evidence that higher staffing improves patient safety.

*Effect on Patient Safety.* Recent studies indicate that staffing of nurses has an impact on quality of care and patient safety (Mitchell & Lang, 2003). Shojania, Duncan, McDonald, and Wachter (2001) indicated in their report to the Agency for Healthcare Research and Quality that "[t]here is strong evidence that leaner staffing of nurses is associated with increased length of stay, nosocomial infection (urinary tract infection, postoperative infection, and pneumonia), and pressure ulcers" (p. 426). Page (2004) acknowledges that lower nurse to patient ratios lead to higher rates of adverse events, such as cardiac and respiratory failures, nosocomial infections, and pressure ulcers. A study of teaching hospitals in Ontario looked at skill mix and its effect on patient outcomes (Hall, Doran, & Pink, 2004). Results of the study suggest that a higher proportion of RNs on medical and surgical units in teaching hospitals is associated with a reduction in medication errors and wound infections. In addition, more wound infections were found with the use of less experienced staff. According to the Joint Commission on Accreditation of Healthcare Organizations (JCAHO)(2003), 24% of 1,609 reported sentinel events as of March

2002 that resulted in death, injury, or permanent loss of function were due, at least in part, to levels of staffing.

Several studies on levels of staffing in ICUs support the premise that fewer nurses result in increased adverse outcomes (JCAHO, 2002). One study of 52 private hospitals in Maryland concluded that decreased staffing was significantly associated with increased cardiac, respiratory, and other complications for patients undergoing abdominal aortic surgery (Dang, Johantgen, Pronovost, Jenckes, & Bass, 2002). Another study on patients undergoing hepatectomy found that reduced staffing of nurses on the night shift was associated with increased complications and longer lengths of stay (Dimick, Swoboda, Pronovost, & Lipsett, 2001).

*Standards for Staffing of Nurses.* The question remains how many nurses are needed to ensure positive patient outcomes. Shojania et al. (2001) state that several measures of staffing of nurses are in use in acute care hospitals. These include nurse to patient ratios, total nursing staff or hours per patient day, RN or licensed vocational nurse (LVN) full time equivalents per patient day, and nursing skill mix. These measurements are usually based on average times and the patient census at a given point in time. Nurse to patient ratios are defined as the number of patients cared for by one nurse and are typically specified by job category, such as RN or LVN. Total nursing staff or hours per day is defined as all nursing staff or all hours of care including RN, LVN, and aides totaled per patient day. A RN or LVN full time equivalent is equal to one

full-time employee paid for 2080 hours in one year. A full-time equivalent can consist of a mixture of part-time employees or of one full-time employee. Nursing skill mix is the proportion of care provided by one category of nurse compared to another. For example, 60% RN skill mix indicates that RNs provide 60% of the hours of patient care. Patient classification systems are another reported mechanism to forecast staffing of nurses based on individual patient level requirements. However, Shojania et al. emphasize that patient classification systems are not adequate for identifying needs by shift or unit.

Recently, because of the passage of a California law requiring minimum levels of staffing to be in place for RNs and LVNs in hospitals by January 2001, attention has been focused on the use of nurse to patient ratios (California Health and Safety Code, 1999). However, California has had a minimum requirement of one licensed nurse to two patients for intensive care and coronary care for more than 20 years. According to Seago, no research could be found that compares patient outcomes in ICUs in California before and after the implementation of minimum ratios for ICU nurses. Therefore, it is difficult to assess effectiveness of the ratios. Connecticut, New Jersey, and Oregon have introduced legislation similar to the California law, while Florida, Ohio, and Rhode Island are considering mandating levels of staffing for nurses (Malone, 2003).

However, mandated ratios and/or levels of staffing are not without critics. Hospital associations oppose the legislation in California, citing costs and problems with meeting the standards

due to the nursing shortage (Malone, 2003). The American Nurses Association also states that there is inadequate scientific evidence to support the use of nurse to patient ratios and two Institute of Medicine studies confirm that there is not enough data to identify specific standards for staffing of nurses (Seago, 2002). According to the JCAHO (2003), inflexible mandated ratios do not account for differences in skill mix of nurses or patient acuity and do not result in nurses being obtainable during a nursing shortage.

The Joint Commission's white paper, *Health Care at the Crossroads - Strategies for Addressing the Evolving Nursing Crisis* (JCAHO, 2002), is the result of a 2001 initiative aimed at identifying issues which negatively impact high quality patient care and patient safety. The report contains three major recommendations related to staffing of nurses. The first recommendation is to create an environment that encourages retention of employees. The second recommendation is to strengthen the nursing educational infrastructure, while the third recommendation supports establishing financial incentives to hospitals that invest in nursing. The report emphasizes that it is necessary to establish levels of staffing based on nurses' competency and skill mix as related to patient mix and acuity in order to retain nurses. In addition, JCAHO proposes that third party payer systems and federal reimbursement programs support and reward effective levels of staffing of nurses.

While JCAHO recognizes that inadequate staffing negatively affects patient safety, quality of care, nurse satisfaction, and

the safety of nurses, the white paper reiterates that the use of mandated ratios is not the answer to the problem but merely a mechanism to add to the supply of nurses (JCAHO, 2002). The primary concern is that ratios do not take into consideration other important factors such as competency of the nurses, skill mix as it relates to patient acuity, and ancillary staff support. Mandated ratios could result in a decrease in the number of other ancillary health care workers in order to meet the requirements for nurses. Consequently, there could be an unintended, negative impact on patient care. With less support from other staff, nurses might be required to assume more non-nursing duties and still be stretched thin in the effort to care for patients. Most importantly, JCAHO does not endorse ratios because ratios do not address patient outcomes.

Beginning in July, 2002, JCAHO standards required hospitals to assess effectiveness of staffing based on outcomes (JCAHO, 2002). The standards compel hospitals to use both clinical and human resource outcomes, which JCAHO refers to as screening indicators. It cites adverse drug events, injuries to patients, length of stay, patient falls, postoperative infections, skin breakdowns, patient complaints, and urinary tract infections as examples of clinical indicators. Human resource indicators may be nursing care hours per patient day, overtime, sick time, staff injuries on the job, staff turnover or vacancy rates, and staff satisfaction. The idea is to associate the number, competency, and skill mix of nursing staff with defined outcomes. The Joint Commission's emphasis is on the need for an

ongoing review of staff effectiveness rather than simply relying on arbitrary standards such as nurse to patient ratios.

Seago (2002) has indicated that the development of formulae for staffing may have more merit than the use of ratios. A formula allows more flexibility to include staff experience, patient acuity, work intensity, support staff availability, and physical layout of the hospital. Formulae might also be more consistent with recommendations of the American Association of Critical Care Nurses (1999) and its emphasis on developing models for staffing based on patient-focused care and measurement of outcomes.

The American Association of Critical Care Nurses (1999) contends it would be difficult to rely on ratios for staffing because ratios do not reflect the needs of a "specific group of patients at a specific time" (p.iii). It describes staffing as a process that includes identification of patients and their needs, consideration of key components of staffing, doing the right thing, and measuring outcomes and successes. It emphasizes that many hospital policies affect staffing requirements. For example, poorly designed processes for admitting and transferring patients can increase the need for critical care nurses. Similarly, the system for prioritizing patients for intensive care beds affects staffing of nurses. The key to staffing is dependent on matching competency and skill mix with the acuity of patients. Simply having the right number of nurses is unsatisfactory if the nurses do not have the required expertise. Major components of staffing include methods of

scheduling, orientation and training to ensure competency, resource management, and clear communication strategies. Doing the right thing includes consideration of ethical, legal, and regulatory standards. In measuring success, the hospital should consider clinical and financial outcomes, risk management, customer service, and nursing staff satisfaction. The American Association of Critical Care Nurses' guidelines underscore the complexity of staffing of critical care nurses and the difficulties in meeting both financial and clinical goals of the hospital. Development of an appropriate model for staffing of nurses is crucial to the financial feasibility and successful delivery of high quality health care for any proposed ICU.

#### Purpose

The purpose of this study is to analyze the ICU proposal from a strategic and financial perspective to determine if it will meet the objectives outlined in the incentive fund concept-proposal. The goal is to better utilize federal resources to provide care to DoD and VA beneficiaries and to achieve cost savings through resource sharing. The objectives of the joint ICU project are to minimize diversions to private sector hospitals, to maintain the status of WHMC as a Level I Trauma Center, to optimize graduate medical education opportunities, and to improve continuity of care by treating veterans and DoD beneficiaries in federal facilities.

#### Methods and Procedures

The ICU project was approved on April 1, 2004 to proceed to the second level of review for funding. The STVHCS and WHMC



were required to complete and submit a narrative business plan and business case analysis for the proposed ICU by May 21, 2004. The format and templates for all submissions (e.g. the business plan, business case analysis, and milestone chart) and the criteria for funding were mandated by the joint VHA and DoD incentive fund committee (see Appendixes B, C, and D). The completed business plan was routed through the VHA and Air Force chains of command simultaneously. It was approved by the Commander of WHMC, the Surgeon at Air Education and Training Command at Randolph Air Force Base, and the Air Force Surgeon General in Washington, D.C. The STVHCS Director approved the plan and then forwarded it to the Veterans Integrated Service Network (VISN) 17 Director for concurrence. Upon receipt of all necessary approvals, the plan was forwarded to the incentive fund committee through the VHA Medical Sharing Office and the Health Affairs DoD/VA Program Office in Washington, D.C. and for final approval through the Health Executive Council.

The researcher was the team leader for the ICU project and authored the concept-proposal, narrative business plan, and business case analysis with input and guidance from the team members. The team leader scheduled and facilitated all meetings, directed collection of data, briefed senior management, and coordinated communications between the team and the incentive fund committee.

The incentive fund committee required the narrative business plan to include the following components: initiative description, goals and objectives, waivers and deviations,

approvals, exportability to other VHA and/or DoD facilities, beneficiary impact and workload, identification of program management, need for contractor support, management information systems, analysis of risks, summary of stakeholders' concerns, analysis of alternative solutions, relationship to the joint strategic plan, financial summary, funds requested by the STVHCS and WHMC, tangible and intangible benefits, and project evaluation metrics. In addition, a milestone chart with dates and sequencing of major activities was submitted with the narrative plan (see Appendix D).

Waivers or deviations from the VA, STVHCS, Air Force, or WHMC are not required to execute this project. Also, there are no plans to use contractors for the ICU initiative. If the project is approved, new nursing personnel will be employed by the STVHCS and project management will be handled with existing personnel. The sharing agreement will be managed through the medical sharing offices of the two facilities.

The management information systems used will be those currently in operation at WHMC. To improve continuity of care, the VA's computerized medical system will be made available to providers at WHMC to view medical records of veterans. At this time, there are no plans to explore interoperability of VA and DoD computer systems and software for this project. Currently, several interfaces are being developed and tested in VA and DoD facilities across the country. As the interfaces are made available to enhance sharing of data, it is anticipated that the ICU will take advantage of those systems. The joint ICU would be

an appropriate site for evaluating future interoperability solutions.

The narrative business plan included a summary of potential concerns of stakeholders (see Appendix E). The key stakeholders for the ICU project are the WHMC and STVHCS patients, veterans' service organizations, health care providers, nurses, union officials, senior management, the local community, and private sector hospitals. If the project is funded, a plan for training and communications will be developed to address the issues of all stakeholders, but it was not completed for the purpose of this project.

A list of evaluation metrics for the ICU initiative was included in the business plan. The project team, including this researcher as the team leader, identified bed utilization, patient satisfaction, employee satisfaction, diversion rates, STVHCS diversion costs, actual costs of nursing salaries and benefits, and reconciliation of the sharing agreement as available and pertinent to ensuring that the ICU project meets the goals outlined in the incentive fund proposal. If the project is approved for funding, specific measurable goals will be developed, monitored, trended, and tracked for each of the metrics. Status and management reports on the ICU initiative will be provided monthly to the Commander of WHMC and the Director of STVHCS. In addition, status reports will be sent to the Air Force Surgeon General's office and to the VISN 17 office. The STVHCS and WHMC will submit all reports as required

by the incentive fund committee when those requirements are identified.

The business case analysis included projected workload; personnel requirements; salary and benefit costs; revenue through third party billings, sharing agreement offsets, and funding through the incentive fund program; recurring expenses, other than salaries; non-recurring expenses; and total capital expenditure requests (see Appendix C).

The expense section of the business case analysis was completed based on marginal costs, which are those costs related to an increase in activity (Finkler, 1999). Variable costs (e.g. costs that change with a proportionate change in volume) for supplies, pharmaceuticals, ambulance contracts, and personnel, as well as additional fixed costs incurred specifically due to the ICU project were calculated and incorporated in the business case analysis. Personnel costs included salaries plus benefits and a 3% annual increase. Annual inflation rates of 3% and 10.1% were applied to supply and pharmacy costs, respectively. Projected increases for salaries and inflation were provided by the chief fiscal officers at the two facilities to facilitate completion of the business case analysis. Equipment costs expressly required to open the six additional beds were added to non-recurring expenses in the business case analysis and included ventilators, IV pumps, and a humidified nasal system. In addition, the cost of diversions to community hospitals for the STVHCS was listed in the expense section in order to demonstrate that, as the cost of diversions to the community

decreased, total revenue would cover total recurring expenses. Sunk costs (e.g. overhead costs and fixed costs for existing staff) were not included in the business case analysis. Sunk costs are defined by Finkler as "costs that have already been incurred and will not be affected by future actions" (p. 432).

Workload for the ICU was calculated based on bed capacity and projected occupancy (see Appendix F). However, it was also anticipated that veterans diverted to WHMC will require care in both ICU and non-ICU beds. The projected total bed days of care were estimated to achieve the financial goals outlined in the proposed sharing agreement. The sharing agreement will be based on the premise that the dollar value of the bed days of care for veterans treated at WHMC will offset the cost of the salaries and benefits of the STVHCS personnel working in the ICU at WHMC. Therefore, the total projected workload for veterans diverted to WHMC was based on the total dollar value of the STHVCS personnel divided by the average cost of a bed day of care at WHMC (see Appendix F).

Sharing agreement offsets were defined as the dollar value of the bed days of care for veterans provided at WHMC. In the sharing agreement, WHMC will provide medical care to veterans equal to the dollar value of the salaries and benefits of the STVHCS employees staffing the ICU. The sharing agreement offsets were excluded from the first and second years of the project because the incentive fund dollars cover the cost of the salaries and benefits for that time frame.

Calculations for revenue from third party collections were based on projected workload and historical data. Incentive funds listed as revenue were those monies requested for the first 2 years of the project through the incentive fund program. The first year request included salaries and benefits for personnel plus the cost of an ambulance contract for the STHVCS and the cost of supplies, pharmaceuticals, and equipment for WHMC. The second year funds requested included salaries and benefits for STVHCS personnel and the ambulance contract. The purpose of the incentive fund request was to enable the two facilities to startup the new ICU without a negative impact on the facilities' operational budgets. The intent was to ask for funds to assist in initiating the project until the ICU was financially self-sustaining. Under the requirements of the incentive fund program, the project must be self-sufficient by the end of the 2-year funding period.

Data sources for the STVHCS included billing records for costs of diversions and for third party reimbursement obtained through Medical Administrative Services, salaries and benefit information obtained through Human Resources Management, and other identified costs provided by Fiscal Services and Acquisition and Materiel Management. Financial data for both revenue and expenses for WHMC were provided by the Administrator for the 59th Surgical Operations Group using the Air Force financial and cost accounting systems.

Both the STVHCS and WHMC had reliable information from which to project revenue and expenses for the business case

analysis. Revenue and expenses were based on data from the cost accounting, fiscal, and personnel systems at both facilities. However, both facilities faced a similar challenge in identifying the costs of diversion. When local emergency medical services are informed that either hospital is on diversion, the patients are transported directly to community hospitals. At that point, neither the STVHCS nor WHMC has information on the numbers or types of diverted patients. For that reason, it is difficult to immediately assess the impact of diversion or to collect data on diversion. However, the STVHCS is billed after care is provided to eligible veteran beneficiaries by private sector hospitals. Therefore, the costs of diversion for the Audie L. Murphy Division were based on retrospective billing data. Since some patients receive care at private sector hospitals for reasons other than diversions, it was necessary to review billing data on all patients for the dates Audie L. Murphy Division was on diversion and to identify and remove data for patients who were not affected by the diversion. Unfortunately, this is a time-consuming manual process but was necessary to improve accuracy of the data. Since the STVHCS does not receive the bills for two to six months after the diversion status, data for the most recent months were not available.

Wilford Hall Medical Center was not able to identify costs due to diversions. Once patients are diverted from WHMC, they are treated by TRICARE contract facilities. Therefore, WHMC does not see the costs of diversion because they are paid out of TRICARE funds and not reported to the military treatment

facilities. Consequently, while costs for diversion exist for WHMC, they could not be accurately calculated. For the purpose of this project, WHMC cost recovery based on the decrease in diversions was not included in the business case analysis. In order to demonstrate the financial feasibility of the project for WHMC, the business case analysis must show that third party billing revenue will more than cover the marginal costs incurred by the ICU. To evaluate the impact of the ICU on diversions, WHMC will include diversion rates as an evaluation metric if the project is funded and must show that the diversion rate decreases to meet American College of Surgeons' standards.

A project team led by the researcher and composed of personnel from both WHMC and the STVHCS identified the positions to be supplied by each hospital and the organizational design of the ICU. The Administrator for the 59th Surgical Operations Group at WHMC would manage the program while the STVHCS Associate Chief of Nursing Services would be responsible for recruitment, selection, and training of nurses for the ICU. The ICU nurses would be STVHCS employees and directly supervised by a STVHCS nurse manager. The physicians, technicians, and other support staff of the ICU would be WHMC employees or active duty personnel. The STVHCS would assign one utilization review nurse to WHMC to evaluate appropriateness of admissions and transfer of veterans back to the STVHCS. One STVHCS clerk would be located at WHMC to facilitate transfer of patients from the Audie L. Murphy Division to WHMC, prepare daily workload reports, verify eligibility for benefits, coordinate transfer of



veteran patients back to the Audie L. Murphy Division, and assist in obtaining medical records.

The requirement for the number of critical care nurses was developed in cooperation with the chief nurse executives at the STVHCS and WHMC. Two models for staffing were evaluated for effectiveness of staffing and financial impact because the two facilities utilize different methods of calculating requirements for nurses (see Appendixes G and H). The model proposed by the STVHCS was used for the business plan and evaluated against industry and JCAHO standards for effectiveness of staffing of nurses to ensure that both facilities would meet JCAHO standards.

The ICU nurses would receive new employee orientation and pertinent occupational training at WHMC. In addition, they would complete the STHVCS new employee orientation for familiarization with VA and STVHCS policies and procedures. Training for federal critical care nurses in San Antonio is currently coordinated and standardized; therefore, development of a new uniform training program would not be necessary.

Alternative solutions for the STVHCS were considered but ruled out as possibilities. The first alternative was to contract with a private sector hospital to provide ICU beds for veterans. Under this scenario, care would be provided to veterans in an ICU in a private sector hospital; however, VA physicians would be privileged at the facility and would provide medical care to the patients. This alternative was not deemed practical because there are currently an inadequate number of

ICU beds in the San Antonio community according to the Director of the Business Office at the STVHCS (J. Mendoza, personal communication, July 20, 2004). Physician coverage was also considered problematic due to travel requirements. Currently, most Audie L. Murphy Division physicians are employed by and divide their work day between the University of Texas Health Science Center and the STVHCS. Coverage at another location would not be well accepted by the medical staff. In addition, medical care to the patients would not be documented in the STVHCS computerized medical record system so continuity of care would be hampered when the patients returned to the VA system for care.

A second alternative was to construct a new ICU in the Audie L. Murphy Division. That alternative had been considered during FY 2003 and reported to the VA Central Office as part of the Capital Asset Realignment for Enhanced Services survey. According to the Chief of Engineering Services, the cost effectiveness analysis on this alternative showed that an initial construction and equipment investment of \$2,700,000 would be needed since additional space would be required at the Audie L. Murphy Division and renovation of existing space was not an option (K. Burris, personal communication, May 21, 2004). Consequently, the payback period for this investment was estimated to be approximately 25 years and was considered too lengthy to be a cost-effective solution. In addition, neither of the alternatives considered for the STVHCS would alleviate the problems occurring at WHMC.

One of the requirements of the business plan was to identify potential risks to the project. Potential risks were defined as issues that, if not addressed, would jeopardize the success of the project.

First, the STVHCS must develop an effective method of managing diversions to WHMC by proactively monitoring bed status. If the diversions to community hospitals are not decreased, the STVHCS would face a financial risk. The hospital would incur both the costs of diversions to community hospitals plus the expense of salaries and benefits of VA personnel assigned to WHMC. To mitigate this risk, the Chief of Staff's Office will coordinate, develop, and implement a strategy for monitoring bed status and appropriately referring and/or diverting patients to WHMC.

The ability to coordinate the diversion of veterans to WHMC with the Southwest Texas Regional Advisory Council for Trauma and local emergency medical services is important to the success of the initiative. Currently, when the STVHCS is on diversion, the local emergency medical services transfer veterans to any one of a number of community hospitals, typically to the closest facility. For the ICU project to be successful, it is necessary to gain support to divert veterans to WHMC rather than community hospitals, whenever medically appropriate. The STVHCS will work directly with the appropriate agencies to develop an agreement in support of the project. Preliminary discussions with those organizations indicate a willingness to support the initiative as it provides additional ICU beds to the community at large.

However, if the local emergency medical services cannot or will not change their procedures to accommodate the ICU project, the STVHCS can minimize this risk to the project by establishing a program to proactively monitor bed status. Under such a program, the STVHCS would refer patients to WHMC to avert the need for Audie L. Murphy Division diversions.

There is a possibility that admissions and transfers to WHMC from the community could fill the ICU beds that were intended for veterans and DoD beneficiaries. However, it is anticipated that not all veterans transferred to WHMC will require an ICU bed and that many of those patients will receive care in a medical bed. Wilford Hall Medical Center currently has adequate medical beds to care for veterans and agrees to provide care to VA patients in ICU and/or non-ICU beds, as appropriate on a bed availability basis. However, if the use of ICU beds by civilians routinely prevents transfer of veterans to WHMC, the memorandum of understanding will be amended to require that a specific number of ICU beds are available at all time for veterans.

The sharing agreement between the two facilities will be developed on the premise that the dollar value of the salaries and benefits of the STVHCS employees assigned to the WHMC ICU will be used to cover the cost of medical care for VA patients treated at WHMC. If the STVHCS diverts fewer patients than projected, then WHMC would agree to owe additional dollars to the STVHCS to cover the salary of the STVHCS personnel. If the STVHCS diverts more patients than projected, the STVHCS would

agree to owe additional monies to WHMC to cover the cost of care. The development and implementation of an effective referral and diversion policy and vigilant monthly monitoring and reconciliation of the sharing agreement mitigate this risk.

If the project is approved for funding, a memorandum of understanding will be developed in support of the sharing agreement. In addition, the STVHCS and WHMC will coordinate with Southwest Texas Regional Advisory Council for Trauma and the local emergency medical services to coordinate development of a mutually agreeable diversion policy.

#### Results

The required investment for the project, as requested from the incentive fund program, is \$2,365,975 for the first year and \$1,819,528 for the second year, as seen in Table 1. The FY 2005 request is equal to the cost of salaries, supplies, equipment, pharmaceuticals, and the ambulance contract. In FY 2006, the request for incentive funds includes only the cost of salaries and the ambulance contract. The rationale is that WHMC will have adequate third party collections by FY 2006 to cover routine supply and pharmaceutical costs and that the equipment is a one-time purchase for the first year. However, it is projected that the STVHCS will need funding for salaries and the ambulance contract to cover costs through the first 2 years.

Table 1

*Incentive Fund Requests for FY 2005 and FY 2006*

Expenses	FY 2005	FY 2006
Salaries	\$1,716,923	\$1,769,528
Supplies	\$317,458	\$ -
Pharmacy	\$24,594	\$ -
Ambulance Contract	\$50,000	\$50,000
Equipment	\$257,000	\$ -
Total Requested	\$2,365,975	\$1,819,528

By the end of the 2-year funding period, it is anticipated that the cost of salaries, medical supply costs, and the ambulance contract would be offset by the reduction in cost of diversions to private sector hospitals and third party collections as demonstrated in the business case analysis (see Appendix I). In addition, the overall project would be self-sustaining through FY 2008. However, the trend for operating gains and losses from FY 2006 to FY 2008 is a downward trend, as seen in Figure 3.

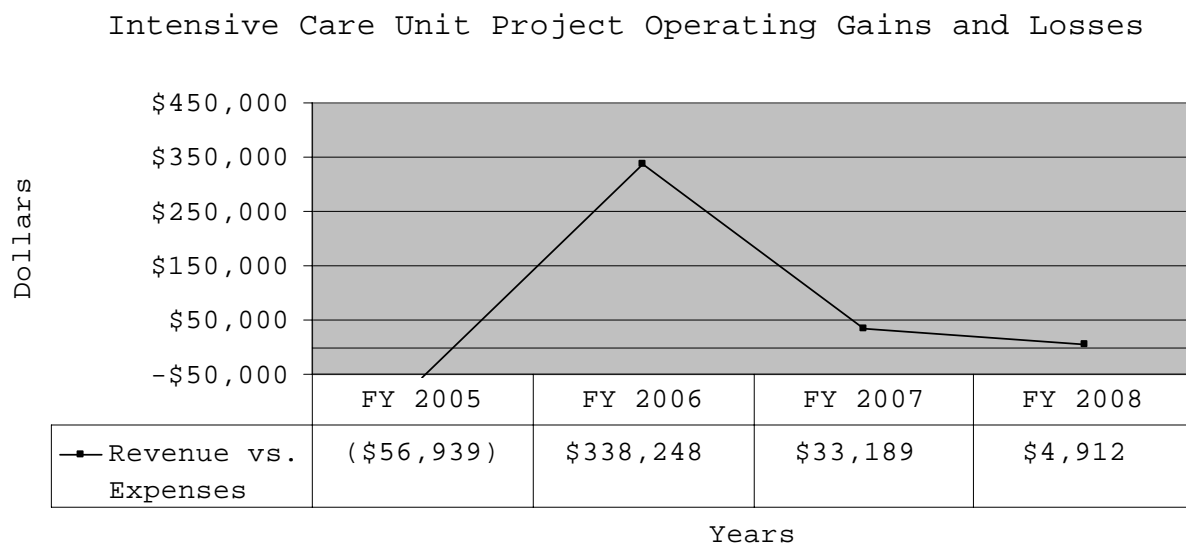


Figure 3. ICU Operating Gains and Losses for FY 2005 - 2008

From October 2003 to February 2004, the STVHCS was billed \$820,800 by community hospitals due to diversions for a projected annualized cost of \$2,028,997 for FY 2005 (based on 3% inflation) and \$2,089,867 for FY 2006 (see Table 2). It projects that it could avoid 25% of cost of diversions in first quarter FY 2005 (beginning at the end of the first month), 50% in second quarter FY 2005, 75% in third quarter FY 2005, 80% in fourth quarter FY 2005, and 90% for all quarters in FY 2006 as outlined in Table 2. Based on these assumptions, the total cost avoidance is estimated to be \$1,124,403 for FY 2005 and \$1,880,880 in FY 2006.

Table 2

*Projected Diversions Costs and Cost Avoidance for**STVHCS for FY 2005 and FY 2006*

	FY 2005	FY 2006
Projected Diversion Costs for STVHCS	\$2,028,997	\$2,089,867
Projected Diversion Cost Avoidance	\$1,124,403	\$1,880,880
1st quarter	\$84,542	\$470,220
2nd quarter	\$253,625	\$470,220
3rd quarter	\$380,437	\$470,220
4th quarter	\$405,799	\$470,220
Total Cost Avoidance	\$1,124,403	\$1,880,880

The annual salaries and benefits for the required STVHCS nursing and administrative staff is approximately \$1,495,698 for FY 2005 and \$1,541,666 for FY 2006. By the second year of the project, the cost of STVHCS salaries and the \$50,000 ambulance contract would be offset by a reduction in diversion costs.

The salaries and benefits in the business case analysis were calculated using the model for staffing of nurses developed by the STVHCS. If the model proposed by WHMC were used, the result would be an average annual increase in expenses of \$231,380 compared to the STVHCS proposal or a total of \$925,520 additional expense for 4 years (see Appendix G).



## Discussion and Conclusions

The requested incentive fund dollars would allow the STVHCS to recruit and hire nurses to staff the joint ICU. Wilford Hall Medical Center would be able to purchase additional ICU monitoring equipment to support the initiative. The incentive funding is necessary for the project for the first 2 years to prevent a drain on operational budgets for existing services at the two facilities.

One of the requirements of the incentive fund program was that the project would be self-sustaining by the end of the 2-year funding. The business case analysis demonstrates that requirement would be met.

The costs associated with diverting veterans to community hospitals would be minimized under this initiative. By the end of the funding period, it is anticipated that the cost of salaries for VA nurses would be offset by the reduction in cost of diversions to private sector hospitals. The projected annualized cost of diversions for the STVHCS, as calculated in the business plan, could be even higher if the trend of increasing diversions continues.

The STVHCS would increase ICU bed capacity without the need for major construction and equipment costs. The approximate cost of renovation for three additional ICU beds at the STVHCS, assuming space were available, is \$450,000 plus \$240,000 for

equipment. According to the Chief of Engineering, there is inadequate space to add beds to the existing facility (K. Burris, personal communication, May 21, 2004). If three additional ICU beds were added, it would be at the expense of other critical existing patient care services and would result in an opportunity cost due to the loss of services.

Under this initiative, the WHMC adult trauma diversion rate would decrease to the American College of Surgeons' standard. Also, the number of trauma admissions would increase above the 1,200 standard required by the American College of Surgeons. Therefore, the ability of WHMC to maintain its status as a Level I trauma center would be strengthened.

Continuity of care would be improved, as veterans and DoD beneficiaries would be seen in federal facilities, where care could be more closely coordinated. Quality of care in the WHMC ICU will be tracked to ensure that VA and Air Force standards are met. To strengthen continuity of care, the STVHCS will provide the WHMC providers with access to the veterans' medical records in the VA's computerized medical record system.

The lack of interoperability between information technology systems currently in use at the STVHCS and WHMC should not have an impact on the success of this initiative. Medical record documentation and software systems currently in use at WHMC will be used in the joint ICU. Furthermore, the WHMC providers will

have access to all veterans' medical records through the VA's computerized medical record system.

The impact on the graduate medical education program at WHMC would be positive. The wider range of case mix associated with the veteran population and the increased number of patients would provide expanded learning experiences for medical and allied health students and residents.

In an era of close scrutiny of VA and DoD sharing, the ICU project supports the VA/DoD Joint Strategic Plan. Goal 2 seeks to improve the access, quality, effectiveness, and efficiency of health care for beneficiaries through collaborative activities (Mackay & Chu, 2003). The ICU project expands access to care for both VA and DoD beneficiaries through a partnership between the STVHCS and WHMC. Through this collaborative effort, guidelines and policies for the delivery of high quality care for ICU patients will be developed and implemented. Training for both VA and DoD health care professionals will be coordinated to ensure standards of care for quality and patient safety are met. More efficient use of resources will be gained through sharing of staff, equipment, and facilities while minimizing diversions to community hospitals. By participating in the incentive fund program, the two facilities will assess the impact of VA/DoD sharing on resource utilization, access to care, patient satisfaction, and quality.

Goal 5 of the VA/DoD Joint Strategic plan aspires to improve management of capital assets, procurement, logistics, financial transactions, and human resources (Mackay & Chu, 2003). According to goal 5.4, the VA and DoD will develop methods to facilitate recruitment, retention, and potential sharing of personnel in positions critical to the two agencies' missions. In the ICU project, the STVHCS will provide critical care nurses, a patient services assistant, and a utilization review manager to alleviate manpower shortages created by military deployments. Wilford Hall Medical Center will provide the physicians and other necessary personnel to support the ICU. Personnel from both STVHCS and WHMC will work side-by-side in the ICU to provide care to both VA and DoD beneficiaries.

The ICU initiative could serve as a model for other VA and DoD facilities interested in sharing staff, facilities, and services. It is anticipated that the successes achieved in the ICU project will be exportable. The ability to gain operational efficiencies through jointly staffing an ICU is applicable to other DoD and VA health care facilities. Valuable information on the advantages and disadvantages of integrating staff from the two agencies can be shared. The ICU initiative will explore financial accountability for shared services, maintenance of medical records, training of shared staff, labor management issues, cost savings and cost avoidance, improved access to

care, and other issues relevant to most VA and DoD sharing projects.

Staffing of nurses was evaluated against industry and JCAHO standards. Since July 1, 2002, JCAHO has discouraged the use of ratios for staffing and has emphasized the need to evaluate effectiveness based on clinical outcomes. If WHMC meets the requirements for effectiveness of staffing based on a review of clinical and human resource screening indicators, as required by JCAHO, survey results for both facilities should be positive. Based on the literature review, the model for staffing the ICU provides critical care nurses meets the standards of care in the industry and in emerging state laws.

The ICU project is not a long-term solution to the lack of ICU beds at either facility. Although the business case analysis demonstrates that the project would be self-sustaining through FY 2008, the downtrend for operating gains is a significant concern. But, the situation could be resolved due to other factors by that time. If the current military conflict in Iraq is ended or scaled back significantly, American troops could return by FY 2008. In that event, WHMC might not require the STVHCS critical care nurses to staff the ICU. However, that would not solve the problem at the Audie L. Murphy Division. Even so, the STVHCS could continue to send patients to WHMC under a sharing agreement, if needed.

In addition, the STVHCS is undergoing a major construction project, which is to be completed before 2008. Although additional ICU beds are not being added to the Audie L. Murphy Division, patient rooms will be enlarged to allow space for more monitoring equipment in non-ICU rooms. With those changes, the STVHCS could explore the use of progressive care beds, which provide the capability to provide care to higher acuity level patients in non-ICU beds. Quintero (2002) reports that the use of progressive care beds in hospitals is a fast growing trend and has the potential to reduce the need for ICU beds. Critical care in many hospitals is now found in intermediate or step-down units, as well as in medical-surgical rooms that are equipped with flexible monitoring systems (Bucher, 1999). To monitor patients who are of high acuity but who do not require the full services of an ICU, portable equipment for monitoring oxygen saturation, respiration and apnea, temperature, blood pressure, and cardiac rhythm can be moved to rooms throughout the hospital. With the enlargement of the patient rooms, the STVHCS could explore the feasibility of adding a progressive care unit and/or progressive care beds.

#### Recommendations

The STVHCS and WHMC should implement the joint ICU, if the incentive funds are awarded. The addition of a joint VA and DoD ICU at WHMC would reduce diversions to community hospitals and

meet the objectives outlined in the incentive fund concept-proposal. However, without the incentive fund monies, the project would be a substantial drain on resources and should not be undertaken.

Several actions should be accomplished before the project is started. First, strategies to minimize the identified risks should be developed in more depth. In particular, a proactive system for monitoring bed status and managing referrals to WHMC should be initiated. A communication plan to address stakeholders' concerns and ensure open communications between all parties involved must be implemented. Although a list of evaluation metrics has been proposed, a detailed plan with measurable goals and the mechanisms for monitoring clinical and financial success of the ICU project is needed. The STVHCS and WHMC should coordinate development of a mutually agreeable diversion policy with Southwest Texas Regional Advisory Council for Trauma and the local emergency medical services. Also, the two facilities must complete a memorandum of understanding in support of the initiative. Methods to routinely monitor and reconcile the sharing agreement must be identified. With those tasks accomplished, the joint VA/DoD ICU will be positioned to succeed, at least in the short-term.

The STVHCS should explore long-term solutions to the shortage of ICU beds since the business case analysis indicates that the project might not be financially successful beyond FY 2008. Also, WHMC's current shortage of critical care nurses is a result of the current military conflict and the need for the

joint ICU may be negated by the return of deployed nurses. Consequently, the STVHCS should study the feasibility of alternative approaches to critical care at the Audie L. Murphy Division. One such tactic could be the addition of progressive care beds and/or a progressive care unit once the major construction project is completed.



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Appendix A. Incentive Fund Concept-Proposal

**DoD-VA Health Care Sharing Incentive Fund**

**Concept-Proposal**

**January 9, 2004**

**Descriptive Information:**

**Initiative Name:** Intensive Care Unit Project - Wilford Hall  
Medical Center and South Texas Veterans Health Care System

**Point of Contact (Name/Phone):**

**DoD POC :** Brian Cramer, Lt Col, USAF, MSC

**VA POC :** Danna Malone, MS, RD, CHE

**Location:** Wilford Hall Medical Center, San Antonio, Texas

**Initiative Description (background, goals, objectives):**

The South Texas Veterans Health Care System (STVHCS) has inadequate intensive care capacity to meet current needs. Therefore, patients are frequently diverted to private sector hospitals in San Antonio. These diversions result in increased costs to the STVHCS. From January 2003 to September 2003, the STVHCS was billed \$967,000 for patient care provided at other facilities due to bed diversions. Bed days of care provided at other hospitals totaled 687 for that period. The bed days of care and costs associated with diversions are continually increasing (attachment 1). The diversions also disrupt continuity of care for veterans when services are not provided within the VA system.

Wilford Hall Medical Center (WHMC) currently operates 26 Intensive Care Unit (ICU) beds but has the capacity to operate 42. Deployment of nursing staff and technicians in support of contingency operations has resulted in the shortfall. Since October 2002, the diversion rate for adult trauma at WHMC has increased significantly from below 5%, which is the maximum allowable by the American College of Surgeons (ACS), to 12% (attachment 2). Additionally, with the reduced number of available ICU beds, the total number of trauma cases for 2003 is approximately 927 as compared to the 1,200 trauma admissions required for re-verification by the ACS. The increased diversion rate and the shortfall of trauma cases will have a significant impact on the status of WHMC as a Level I Trauma Center.

The STVHCS has the ability to recruit and hire intensive care nurses. Therefore, it is proposed that the STVHCS provide VA nurses to staff a six-bed ICU at WHMC. Physicians and all other necessary staff would be provided by WHMC using the existing workforce. The intensive care unit would be maintained by WHMC. Both VA and DoD patients would be admitted to the ICU. Rather than divert patients to private sector hospitals, the STVHCS would divert patients as necessary to WHMC. The need for WHMC diversions would be minimized with the addition of the six-bed ICU.

The goal is to ensure adequate intensive care capacity at both facilities, to minimize diversions to private sector hospitals, to maintain the status of WHMC as a Level I Trauma Center, and to provide care to all veterans and DoD beneficiaries in federal facilities. The objectives are to better utilize federal resources to provide care to DoD and VA beneficiaries and to achieve cost savings through resource sharing. A secondary objective is to test other VA/DoD sharing initiatives, such as joint credentialing and laboratory data sharing.

**Does this proposal have the support of the DoD or VA counterpart?** Yes. The Director of the South Texas Veterans Health Care System and the Commander of Wilford Hall Medical Center both fully support the project. A Memorandum of Understanding is currently under development.

**Does this initiative support the Joint Strategic Plan?** Yes. This initiative would provide cost-effective, high quality care to veterans and DoD beneficiaries through coordination of resources. The project recognizes and supports the mission of both the VA and DoD.

**Financial Information:**

**Required Investment (costs):** The incentive funding would enable the STVHCS to recruit and hire nurses to staff the

intensive care unit. The annual salaries and benefits for the required nursing staff is approximately \$1,400,000.

Wilford Hall Medical Center would require an additional investment of approximately \$300,000 to purchase additional ICU monitoring equipment (ventilators, EKG monitoring, infusion pumps, suction) to support this initiative.

**Tangible/Economic Benefits:** The costs associated with diverting veterans to private sector hospitals would be minimized. By the end of the funding period, it is anticipated that the cost of salaries for VA nurses would be offset by the reduction in cost of diversions to private sector hospitals. The projected annualized cost of bed diversions to the STVHCS for CY 2004 is estimated to be \$1,392,000. If the trend of increasing diversions continues, the annual cost could be significantly higher. The South Texas Veterans Health Care System would increase ICU bed capacity without the need for major construction and equipment costs. The approximate cost of renovation for three additional ICU beds at the STVHCS is \$450,000 plus \$240,000 for equipment.

The Wilford Hall Medical Center adult trauma diversion rate would decrease by approximately 50%, right at the ACS standard. The number of trauma admissions would increase above the 1,200 standard required by ACS. Overall VA and DoD medical costs



would be decreased, as WHMC is able to offer care at a more cost efficient rate than the private sector.

**Intangible Benefits:** Continuity of care would be improved, as veterans and DoD beneficiaries would be seen in federal facilities. As a demonstration site for two VA/DoD Health Care Resource Sharing and Coordination projects, STVHCS and WHMC are positioned to improve the communications and continuity of care to patients in federal facilities with an eventual goal of providing seamless care. The impact on the graduate medical education program at WHMC would be positive as there would be a wider range of case mix associated with the increased number of VA patients.

**Other Supporting Information:**

**Impact on waiting times or access:** Access to inpatient care in the STVHCS and WHMC would be improved with implementation of this initiative.

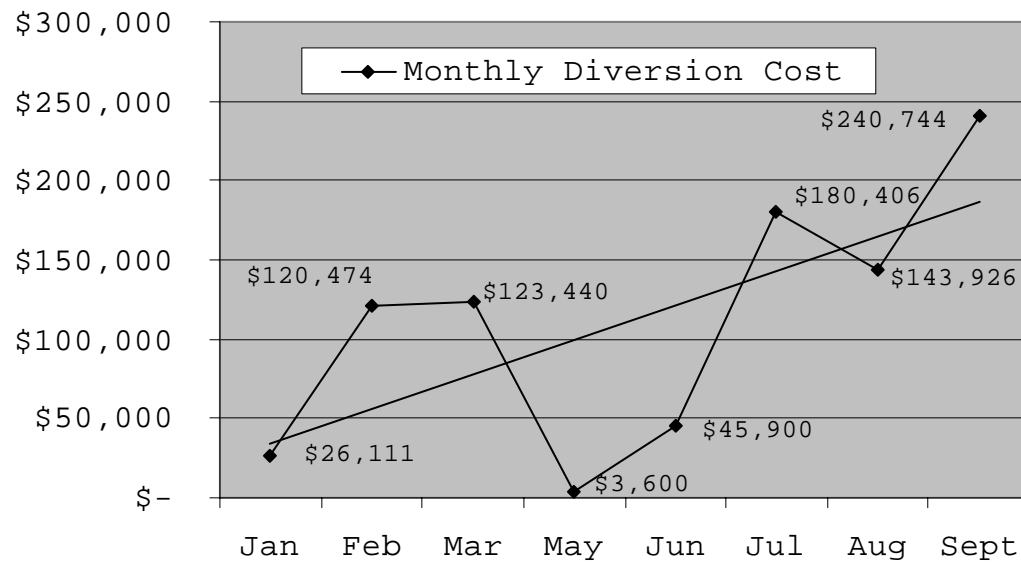
**Impact on quality of care:** Although patients receive quality care in the private sector hospitals, continuity of care is disrupted. No assurance can be made that patients receive the standard of care provided in the federal facilities. Private sector hospitals are not required to meet the stringent performance standards required by the VA.

**For VA: Describe how this proposal may impact Capital Asset Realignment for Enhanced Services (CARES) study recommendations for this facility.**

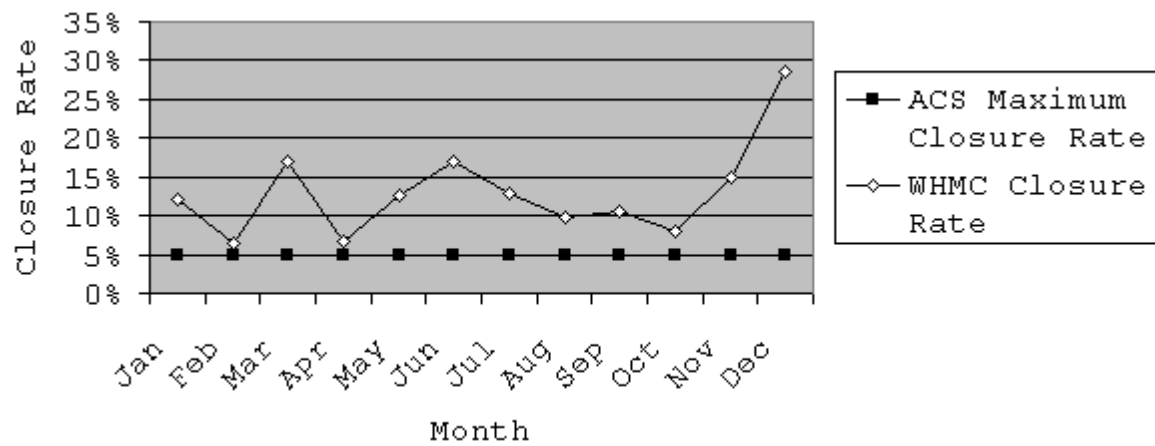
Along with the Draft CARES Plan recommendation to contract beds for the Lower Valley, this project will allow Audie L. Murphy Division of the STVHCS to relieve some of the pressure of constrained bed space. (The National Draft CARES Proposal recommends that Kerrville medical beds be moved to San Antonio, Texas. This sharing proposal will not replace the recommended Major Construction project in the Draft CARES Plan.)

**Metrics - What performance criteria will be used to measure success of the proposal?** The following metrics would be used: reduction in days on diversion to private sector hospitals, access, customer satisfaction, and overall quality of care.

Attachment 1. Estimated Diversion Cost for  
STVHCS in CY 03



Attachment 2: WHMC Bed Closures in 2003



Appendix B. Format for the Narrative Business Plan as Provided  
by the Incentive Fund Committee

**Attachment 1**

**DoD-VA Health Care Sharing Incentive Fund**

**Business Plan**

**Descriptive Information:**

**Initiative Name:**

**Point of Contact (Name/Phone):**

**DoD POC** \_\_\_\_\_

**VA POC** \_\_\_\_\_

**Location:**

**Initiative Description (background, goals, objectives):**

Make sure to address the following:

- Provide a summary description of the project
- Describe the initiative's goals and objectives
- What outcomes are being sought?
- What waivers, deviations, or certifications are necessary for the successful execution of your program?
- What approvals or authorizations are required? For example, if your proposal is for a major piece of equipment, has it been approved by the appropriate committees in VA and DoD?
- Do you anticipate this initiative will be "exportable" to other Joint Venture or DoD/VA sharing sites?
- Number of beneficiaries impacted by this proposal; breakdown by VA and DoD
- Have you identified any interoperability requirements and how are you addressing them?
- If submission contains more than one component/system, prioritize each of the components of the proposal. Are any of the components interdependent?
- What alternative solutions were considered?
- Are there any unique circumstances?
- How will you manage this program? Identify key roles and responsibilities for program functions such as program

management, requirements management, contract tracking and oversight, evaluation, contract solicitation, transition to support, performance measurement, reporting, etc.

- If contractors are involved, how will contracts be managed to ensure that the effort is managed and controlled, contractual requirements are met, and the needs of the user are satisfied?
- How will the decision authorities maintain an appropriate level of insight on this program, e.g., scheduled meetings, periodic reviews, etc?
- What type of management information systems will be used?
- Are there any "show stoppers" that could halt the initiative if not overcome?
- Address any concerns included in the comments column in Attachment 1.
- Summary of stakeholder comments and concerns

**Does this proposal have the support of the DoD or VA counterpart?**

**Does this initiative support the Joint Strategic Plan?**

- Cite specific goals within the Joint Strategic Plan and describe how they are met by your project.

**Financial Information:**

**Required Investment (costs):**

- How much funding is being requested from the incentive fund?
- If your request is for more than one year, please stipulate how much is being requested in year one and how much in year two.
- Provide an approximate breakout of benefit to VA and DoD (e.g., if the incentive fund request is for \$500K, please indicate \$250K will benefit VA and \$250K will benefit DoD or whatever the approximate breakout is).
- How will recurring costs be supported after incentive funding is no longer available?

**Tangible/Economic Benefits:**

- Summarize the results of the business case analysis.

**Intangible Benefits:**

**Other Supporting Information:**

**Impact on waiting times or access:**

**Impact on quality of care:**

**For VA:** Describe how this proposal may impact Capital Asset Realignment for Enhanced Services (CARES) study recommendations for this facility.

**Metrics - What performance criteria will be used to measure success of the proposal?**

- How will we know we have been successful?

**Milestones - List major milestones to reach the goals and objectives of this initiative.**

Appendix C. Format for the Business Case Analysis as Provided  
by the Incentive Fund Committee

Attachment 2: Business Case Analysis Format

Incentive Fund Application Workload Forecasts

VA to DoD

Admissions	Initial Yr	2nd Yr	3rd Yr	4th Yr	Total
					-
					-
					-
TOTAL	-	-	-	-	-

DoD to VA

Admissions	Initial Yr	2nd Yr	3rd Yr	4th Yr	Total
					-
					-
					-
TOTAL	-	-	-	-	-



## Attachment 2: Business Case Analysis Format

## PERSONNEL LISTING

Initiative Title:

*Annual Salary should include Fringe		Initial Year		2nd Year		3rd Year		4th Year	
	POSITION	FTEE	ANNUAL SALARY*	FTEE	ANNUAL SALARY*	FTEE	ANNUAL SALARY*	FTEE	ANNUAL SALARY*
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
TOTAL:		0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00

## Attachment 2: Business Case Analysis Format

## Incentive Fund Application Financial Worksheet (\$000)

## Proposed Initiative

		NON-CUMULATIVE ANNUAL DATA			
		Initial Year	2nd Year	3rd Year	4th Year
REVENUE					4 Year Total
VA/DoD sharing revenue					\$0
3rd party collections					\$0
Incentive fund					\$0
Other (List)					\$0
					\$0
					\$0
					\$0
Total Estimated Revenue					\$0

Total Revenue					\$0
---------------	--	--	--	--	-----

		NON-CUMULATIVE ANNUAL DATA			
		Initial Year	2nd Year	3rd Year	4th Year
RECURRING EXPENSE					4 Year Total
(List)					
Personnel		0	0	0	\$0
Supplies					
Pharmacy					
Travel					\$0
Leases					\$0
Contracts					\$0
					\$0
Other (List)					\$0
					\$0
					\$0
Total Recurring Expense					\$0

		NON-CUMULATIVE ANNUAL DATA			
		Initial Year	2nd Year	3rd Year	4th Year
NON-RECURRING EXPENSE					4 Year Total
(List)					
Equipment					\$0
Capital lease					\$0
Non-Recurring Maintenance					\$0
Minor Construction*					
(List)					\$0
					\$0
					\$0
Other (List)					\$0
					\$0
					\$0
					\$0
Tot. Non-Recur. Expense					\$0

Total Projected Expense					
-------------------------	--	--	--	--	--

REVENUE vs. EXPENSES					
----------------------	--	--	--	--	--

## Appendix D. Milestone Chart and Schedule of Activities

Activity Sub Activity/Tasks Description	Owner (DoD, VA or Both)	Start	% Complete	Finish	2nd Quarter, FY04			3rd Quarter, FY04		
					Jan	Feb	Mar	Apr	May	Jun
<b>Project Team Organization</b>										
Project Team Organization	Both	12/15/03	100	12/31/04						
Requirements Refinement	Both	12/15/03	100	4/1/04						
Site Visits	Both	1/5/04	100	5/6/04						
<b>Prepare / submit business plan &amp; BCA</b>	Both	4/1/04	100	5/12/04						
<b>Develop sharing agreement</b>										
Develop local sharing agreement		6/15/04		7/1/04						
Obtain VA & USAF approval	Both	7/1/04		7/21/04						
<b>Develop policy and procedures for monitoring of beds</b>	Both	7/1/04		10/1/04						
Training										
Implementation										
<b>Develop staffing model for ICU Nurses</b>										
Meeting with WHMC & STVHCS nursing staff to agree on staffing model	Both	5/17/04	100	6/1/04						
<b>Recruit, hire and orient/train nursing personnel</b>	VA	6/1/04		11/1/04						
Place ads in newspapers, journals	VA	6/1/04		11/1/04						
Hire staff	VA	7/1/04		10/1/04						
Provide orientation and training	Both	10/1/04		11/1/04						
<b>Purchase equipment for ICU</b>	DoD	8/1/04		10/1/04						
<b>Gain approval from STRAC and EMS for diversion policy changes</b>	Both	8/1/04		10/1/04						
<b>Develop communication strategy for stakeholders</b>	Both	7/1/04		9/1/04						
<b>Develop evaluation and reporting mechanisms</b>	Both	9/1/04		11/1/04						
<b>Open the ICU to patients</b>	Both	11/1/04								

Appendix E. Narrative Business Plan

**DoD-VA Health Care Sharing Incentive Fund**

**Business Plan**

**Submitted May 12, 2004**

**Descriptive Information:**

**Initiative Name:** Intensive Care Unit Project - Wilford Hall  
Medical Center and South Texas Veterans Health Care System

**Point of Contact (Name/Phone):**

DoD POC Donnie Wideman, Lt Col, USAF, MSC

VA POC Danna Malone, MS, RD, CHE

**Location:** Wilford Hall Medical Center, San Antonio, Texas

**Initiative Description (background, goals, objectives):**

**BACKGROUND:** Audie L. Murphy Division of South Texas Veterans Health Care System (STVHCS) has inadequate intensive care capacity to meet current needs. Therefore, patients are frequently diverted to private sector hospitals in San Antonio. These diversions result in increased costs to the STVHCS. For the first five months of FY 2004, the STVHCS was billed \$820,800 for patient care provided at private sector facilities due to bed diversions. The Audie L. Murphy Division was on diversion 50 days or 37.3% of total days from October 2003 to February 11, 2004. The costs associated with diversions are continually increasing (attachment 1). The diversions also disrupt

continuity of care for veterans when services are not provided within the VA system.

Wilford Hall Medical Center (WHMC) currently operates 26 Intensive Care Unit (ICU) beds but has the capacity to operate 42. Deployment of nursing staff and technicians in support of contingency operations has resulted in the inactivation of 16 ICU beds. Since October 2002, the diversion rate for adult trauma at WHMC has increased significantly from below 5%, which is the maximum allowable by the American College of Surgeons (ACS), to 12% (attachment 2). Additionally, with the reduced number of available ICU beds, the total number of trauma cases for 2003 is approximately 927 as compared to the 1,200 trauma admissions required for re-verification by the ACS. The increased diversion rate and the shortfall of trauma cases could have a significant impact on the status of WHMC as a Level I Trauma Center.

**GOALS/OBJECTIVES:** The goal is to better utilize federal resources to provide care to DoD and VA beneficiaries and to achieve operational efficiencies through resource sharing. The objectives are to increase intensive care bed capacity for both facilities, to minimize diversions to private sector hospitals, to maintain the status of WHMC as a Level I Trauma Center, and to improve continuity of care by treating veterans and DoD beneficiaries in federal facilities.

**OUTCOMES:** The South Texas Veterans Health Care System has the ability to recruit and hire critical care nurses. Wilford Hall Medical Center has ICU beds available for sharing. Therefore, it is proposed that the STVHCS provide VA nurses to staff a six-bed ICU at WHMC. The South Texas Veterans Health Care System would assign one utilization review manager and one patient services assistant to WHMC to coordinate admissions and transfers and handle other administrative and reporting functions. Physicians and all other necessary staff would be provided by WHMC using the existing workforce. The ICU would be maintained by WHMC. Both VA and DoD patients would be admitted to the ICU. Rather than divert patients to private sector hospitals, the STVHCS would divert patients as necessary to WHMC. This scenario would result in VA patient admissions to ICU and/or non-ICU beds to alleviate the constrained bed space at the STVHCS. Wilford Hall Medical Center would agree to care for the veteran patients on a bed availability basis while gaining additional ICU bed capacity for DoD beneficiaries. The need for WHMC diversions would be minimized with the addition of the six-bed ICU.

**WAIVERS/DEVIATIONS:** It is not anticipated that waivers or deviations will be required from the VA, STVHCS, U.S. Air Force, or WHMC to execute this project. The review and approval process required for the incentive fund program will be used to obtain the necessary approvals from the Veterans Health

Administration (VHA), VISN 17, STVHCS Director, DoD, Air Force Surgeon General's Office, Air Education and Training Command (AETC), and the WHMC Commander.

**APPROVALS:** The South Texas Veterans Health Care System and WHMC will coordinate with Southwest Texas Regional Advisory Council for Trauma and the local emergency medical services to facilitate a manageable ambulance diversion policy as it relates to assignment of all levels of VA and DoD patients during periods of diversion.

JCAHO standards related to effectiveness of staffing for nurses were researched to ensure that both facilities would meet JCAHO standards even though the two medical facilities use different models to staff nurses in their ICUs. Since July 1, 2002, JCAHO has discouraged the use of ratios for staffing and emphasized the need to evaluate staff effectiveness based on clinical outcomes. If WHMC meets the requirements for effectiveness of staffing based on a review of clinical and human resource screening indicators, as required by JCAHO, survey results for both facilities should be positive.

**EXPORTABILITY:** It is anticipated that the successes achieved in the ICU project will be exportable. The ability to gain operational efficiencies through jointly staffing an ICU is applicable to other DoD and VA health care facilities. Valuable information on the advantages and disadvantages of integrating

staff from the two agencies can be shared. This initiative will explore financial accountability for shared services, medical record documentation, training of shared staff, labor management issues, cost savings and cost avoidance, improved access to care, and others relevant to most VA and DoD sharing projects.

**BENEFICIARY IMPACT:** The additional six-bed ICU will be able to admit an additional 438 patients annually based on an average length of stay of 4.2 days and will admit both DoD and VA patients on a bed availability basis. The projected annual workload for veteran beneficiaries to be cared for by WHMC is approximately 997 bed days of care. That care may be provided in the ICU or a general medical/surgical bed as appropriate.

**INTEROPERABILITY:** The lack of interoperability between information technology systems should not have a significant impact on this initiative. Because care is provided in the ICU at WHMC, medical record documentation and software systems currently in use at WHMC will be used in that setting. However, to improve continuity of care when veterans are diverted, the STVHCS will provide the WHMC providers with access to the veterans' medical records in the VA's computerized medical record system (CPRS). It will be made available to WHMC staff providers and assigned VA nursing staff using existing virtual private network (VPN) connectivity. In turn, WHMC will provide discharge summaries for inclusion in the CPRS.



**ALTERNATIVE SOLUTIONS:**

- **CONTRACT FOR BED DAYS OF CARE:** This alternative is not practical because of the inadequate number of ICU beds that currently exist in the San Antonio community. It is also not feasible from the standpoint of physician coverage and lack of seamless care for the VA patients in a remotely located ICU.
- **CONSTRUCT NEW ICU:** The cost effectiveness analysis on this alternative shows that a construction and equipment investment of \$2,700,000 would be needed upfront since additional space must be added to the Audie L. Murphy Division and renovation of existing space is not an option. Consequently, the payback period for this investment (assuming a marginal savings of \$23 per bed days of care for in-house VA care compared to the proposed sharing agreement) would be over 25 years. This payback period is considered to be too long for a truly cost-effective solution.

**UNIQUE CIRCUMSTANCES:** The President's Task Force to Improve Health Care Delivery for Our Nation's Veterans released its final report in May 2003. The report highlighted a growing disparity between VA demand and capability. While the overall number of veterans eligible for care in the VA is decreasing,

the actual number of beneficiaries requesting care is growing. Following the passage of the Veterans' Health Care Eligibility Reform Act of 1996, VA's mission moved from primarily treating veterans with service-connected injuries and disabilities and indigent veterans to offering comprehensive health care to all enrolled veterans. The 1999 Millennium Health Care and Benefits Act increased demand even more by expanding benefits. At the same time, VA has been dismantling much of its tertiary care to provide primary care, ambulatory care, and preventive services to its beneficiaries. In an effort to meet all of these converging forces, the Audie L. Murphy Division has converted much of its tertiary care space for other important services and is now extremely space constrained. In addition, many of the rooms in the hospital are undersized for today's modern technology and are still 4-bed rooms. Future construction plans seek to alleviate some of these issues but do not provide capacity for additional ICU beds.

**PROGRAM MANAGEMENT:** The Commander of WHMC and the Director of the STVHCS will approve this business plan, which will provide a basis for project implementation. A memorandum of understanding will be written as required. The local steering committee is composed of the WHMC Chief of the Medical Staff, STVHCS Chief of Staff, STVHCS Associate Director, WHMC Chief Nurse Executive, STVHCS Associate Director of Patient Care Services, WHMC

Director of Plans and Operations, and STVHCS Medical Sharing Officer and will be responsible for management of the program.

The Administrator for the 59th Surgical Operations Group at WHMC will assume program management. The STVHCS Associate Chief of Nursing Services will be responsible for recruitment, selection, and training of nurses for the ICU. The critical care nurses will be STVHCS employees and directly supervised by a STVHCS nurse manager. Functionally, the nurses will report to the 59th Surgical Operations Squadron at WHMC.

The ICU nurses will receive new employee orientation and pertinent occupational training at WHMC. In addition, they will complete the STHVCS new employee orientation that exposes them to VA and STVHCS policies and procedures. Training for critical care nurses in San Antonio is currently coordinated and standardized throughout the community; therefore, development of a uniform training program will not be required for this project.

The standard format for training critical care nurses in the San Antonio community to introduce them to the critical care environment has consisted of providing a 24-hour basic ECG course and then a critical care course. The core critical care course has been adopted from the Care of the Acute and Critically Ill Patient from the American Association of Critical Care Nurses national organization. The course work includes

arterial blood gas interpretation and hemodynamic content along with other essential content. In addition, it consists of an overview of each of the body systems as they pertain to the critically ill patient including essential nursing care content. Approximately 90 contact hours are provided each nurse. This entails approximately one training day per week throughout a 3 to 4 month orientation. The clinical component of training is done in a variety of critical care environments to ensure the validation of competency of essential skills in caring for the acutely ill patient.

The South Texas Veterans Health Care System will provide one utilization review manager on-site at WHMC to evaluate appropriateness of admissions and transfer of veterans back to STVHCS. One STVHCS patient services assistant is to be physically located at WHMC to coordinate the tracking of all patients diverted to WHMC; preparation of daily workload reports; facilitate and coordinate transfer of patients to WHMC from Audie L. Murphy Division; facilitate and coordinate transfer-out of veteran patients back to Audie L. Murphy Division; and assist the nurse manager and utilization review manager with additional administrative activities, i.e., verification of eligibility, assistance with medical records from Audie L. Murphy Division, etc. The physicians, technicians

and other support staff of the ICU are WHMC employees or active duty personnel.

The Commander of WHMC and the Director of the STVHCS currently meet monthly to explore and identify sharing opportunities. At future meetings, they will receive status and management reports on the ICU initiative. In addition, status reports will be sent to the appropriate major commands and VISN 17 office, as well as the incentive fund work group and the Health Executive Council. The South Texas Veterans Health Care System and WHMC agree to provide all reports as required by the incentive fund project when those requirements are identified.

**CONTRACTOR SUPPORT:** There are no plans to use contractors for the ICU initiative. New nursing personnel will be employed by the STVHCS and project management will be handled with existing personnel. The sharing agreement will be managed through the medical sharing offices of the two facilities.

**MANAGEMENT/INFORMATION SYSTEMS:** Management information systems used will be those currently in place at WHMC. The VA's CPRS will be made available to providers at WHMC to view medical records of veterans to improve continuity of care. At this time, there are no plans to explore interoperability of VA and DoD systems for this project. However, once operational, the shared unit would be an appropriate site for piloting interoperability solutions in the future.

**SIGNIFICANT RISKS:** The most significant risks to the ICU project include:

- Management of referrals
  - The South Texas Veterans Health Care System must develop an effective method of managing diversions to WHMC by proactively monitoring bed status.
  - To mitigate this risk, the Chief of Staff's office will coordinate, develop, and implement a strategy for monitoring bed status and appropriately diverting patients to WHMC.
- Southwest Texas Regional Advisory Council for Trauma and emergency medical services policies
  - The ability to coordinate with the local trauma agencies related to diversion of veteran patients is important to the success of the initiative.
  - The South Texas Veterans Health Care System will work directly with the Southwest Texas Regional Advisory Council for Trauma and surrounding emergency medical services to gain agreement for a change in policy.
- Third party transfers to WHMC
  - There is a possibility that, once the ICU beds are open, third party transfers from the community could fill the ICU beds. The memorandum of understanding

will state that use of ICU and other beds at WHMC by veterans will be based on bed availability.

- o This risk is mitigated by the fact that not all patients transferred will require an ICU bed and may be able to receive care in a medical bed. Wilford Hall Medical Center agrees to provide care to VA patients in ICU and/or non-ICU beds as appropriate and on a bed availability basis.
- Financial risk
  - o This program seeks to fund staffing of the WHMC ICU with the STVHCS nurses by decreasing the costs of Audie L. Murphy bed diversions to community hospitals. If the decrease in private sector billings is not realized, the cost avoidance anticipated to cover the nurses' salaries would not be achieved.
  - o The sharing agreement between the two facilities will be developed on the basis that the dollar value of the nurses' salaries will be used to cover the cost of bed days of care for STVHCS patients treated at WHMC. If the STVHCS diverts a smaller number of patients than projected, then WHMC would owe additional dollars to the STVHCS to cover the nurses' salaries. If the STVHCS diverts more patients than projected, the

STVHCS will owe additional monies to WHMC to cover the cost of care.

- o The development and implementation of an effective referral and diversion policy and vigilant monthly monitoring and reconciliation of the sharing agreement mitigate this risk.

**SUMMARY OF STAKEHOLDER COMMENTS AND CONCERNS:** The key stakeholders for the ICU project are the WHMC and STVHCS patients, veterans' service organizations, health care providers, nurses, union officials, licensed health care professionals, senior management, as well as the local community and private sector hospitals. A plan for training and communications will be developed to address the concerns of all stakeholders. Anticipated stakeholder concerns include:

- The patient expects the same level of high quality care, whether provided at a VA or DoD facility.
- Some Audie L. Murphy Divisions patients may not understand the need or want to receive care at WHMC.
- Veterans' service organizations will require information on the goals and concepts of the program, as well as the referral and diversion policies, to effectively communicate with their constituencies.



- Physicians and other personnel at WHMC may be concerned about the impact of using VA staff within their facility and ICU.
- Critical care nurses need to fully understand the implications of working within WHMC as STVHCS employees.
- Union officials will address any issues related to changes in working conditions.
- Senior management of both WHMC and the STVHCS will expect that high quality care is provided to all beneficiaries, the program does not impact negatively on patients or employees, financial goals are achieved, and performance measures are met.
- San Antonio has experienced increasing diversions at all hospitals in the community. Therefore, the increase of ICU beds should be positive for the community as a whole due to increased capacity and predictability in the referral process. Some local private sector hospitals may see a decrease in revenue from VA patients diverting to WHMC rather than community hospitals.

**DoD/VA SUPPORT:** The Director of the STVHCS and the Commander WHMC both fully support the project. The business plan for this project will be routed through the appropriate chains of

approval for both VA and Air Force to include VISN 17, AETC, and the Air Force Surgeon General.

**JOINT STRATEGIC PLAN:** This initiative will provide cost-effective, high quality care to veterans and DoD beneficiaries through coordination of resources. The project recognizes and supports the mission of both the VA and DoD.

Specifically, the ICU initiative supports the following goals from the Joint Strategic Plan:

- Goal 2 High Quality Health Care - Improve the access, quality, effectiveness and efficiency of health care for beneficiaries through collaborative activities.
  - o The South Texas Veterans Health Care System and WHMC are expanding the use of partnering and sharing agreements to improve support and access to care for both VA and DoD beneficiaries. Through this collaborative effort, guidelines and policies for the delivery of high quality care for ICU patients will be developed and implemented. Training for both VA and DoD health care professionals will be coordinated to ensure standards of care for quality and patient safety are met. More efficient use of resources is gained through sharing of staff, equipment, and facilities while minimizing diversions to community hospitals. By participating in the incentive fund

program, WHMC and the STVHCS will serve as test sites for the business case analysis process, which will assess the impact of VA/DoD sharing on resource utilization, access to care, patient satisfaction, and quality.

- Goal 5 Efficiency of Operations - Improve management of capital assets, procurement, logistics, financial transactions, and human resources.
  - o Goal 5.4 VA and DoD will develop methods to facilitate recruitment, retention, and potential sharing of personnel in positions critical to the Departments' complementary missions.
  - o Wilford Hall Medical Center and the STVHCS will jointly staff an ICU. The South Texas Veterans Health Care System will provide critical care nurses, patient services assistants, and a utilization review manager to alleviate manpower shortages created by military deployments and budgetary constraints. WHMC will provide the physicians and other necessary personnel to support the ICU. The South Texas Veterans Health Care System and WHMC personnel will work side-by-side in the ICU to provide care to both VA and DoD beneficiaries.

**Financial Information:**

**REQUIRED INVESTMENT (costs):** See attached Business Case Analysis

- Initial Year Incentive Fund Request: \$2,365,975
  - Salaries: \$1,716,923 (STVHCS)
  - Supplies: \$317,458 (WHMC)
  - Pharmacy: \$24,594 (WHMC)
  - Ambulance Contract: \$50,000 (STVHCS)
  - Equipment: \$257,000 (WHMC)
- First Year Breakout:
  - STVHCS: \$1,766,923
  - WHMC: \$599,052
- Second Year Incentive Fund Request: \$1,819,528
  - Salaries: \$1,769,528 (STVHCS)
  - Ambulance Contract: \$560,000 (STVHCS)

**Recurring Costs:** By the end of the 2-year funding period, it is anticipated that the cost of salaries, medical supply costs, and the ambulance contract would be offset by the reduction in cost of diversions to private sector hospitals, as well as third-party collections (as demonstrated in the business case analysis).

From October 2003 to February 2004, the STVHCS was billed \$820,800 by community hospitals during ambulance diversions for a projected annualized cost of diversions of \$2,028,997 for FY

2005 (based on 3% inflation) and \$2,089, 867 for FY 2006. The annual salaries and benefits for the required STVHCS nursing and administrative staff is approximately \$1,716,923 for FY 2005 and \$1,769,528 for FY 2006. By the second year of the project, the cost of STVHCS salaries and the ambulance contract (\$1,769,528 + \$50,000 = \$1,819,528) would be offset by a reduction in ambulance diversion costs.

*Projected Diversions Costs and Cost Avoidance for*

*STVHCS for FY 2005 and FY 2006*

	FY 2005	FY 2006
Projected Diversion Costs for STVHCS	\$2,028,997	\$2,089,867
Projected Diversion Cost Avoidance	\$1,124,403	\$1,880,880
1st quarter	\$84,542	\$470,220
2nd quarter	\$253,625	\$470,220
3rd quarter	\$380,437	\$470,220
4th quarter	\$405,799	\$470,220
Total Cost Avoidance	\$1,124,403	\$1,880,880

Assumptions: The South Texas Veterans Health Care System would avoid 25% of cost of diversions in 1<sup>st</sup> quarter FY 2005, 50% in 2<sup>nd</sup> quarter FY 2005, 75% in 3<sup>rd</sup> quarter FY 2005, 80% in 4<sup>th</sup> quarter FY 2005, and 90% for all quarters in FY

2006. With these assumptions, the amount of cost avoidance is \$965,164 in FY05 and \$208,986 in FY06.

**TANGIBLE/ECONOMIC BENEFITS:** The costs associated with diverting veterans to private sector hospitals would be minimized under this initiative. By the end of the funding period, it is anticipated that the cost of salaries for VA nurses would be offset by the reduction in cost of diversions to private sector hospitals. Also, the STVHCS would increase ICU bed capacity without the need for major construction and equipment costs. The approximate cost of renovation for three additional ICU beds at the STVHCS, assuming space were available (which it is not) is \$450,000 plus \$240,000 for equipment. If three additional ICU beds were added to the existing facility, it would be at the expense of other critical existing patient care services and would result in an opportunity cost due to the loss of services.

The adult trauma diversion rate for WHMC would decrease by approximately 50%, right at the ACS standard. The number of trauma admissions would increase above the 1,200 standard required by ACS.

**INTANGIBLE BENEFITS:** Continuity of care would be improved, as veterans and DoD beneficiaries would be seen in federal facilities. As a demonstration site for two VA/DoD Health Care Resource Sharing and Coordination projects, the STVHCS and WHMC are positioned to improve the communications and continuity of

care to patients in federal facilities with an eventual goal of providing seamless care. The impact on the graduate medical education program at WHMC would be positive as there would be a wider range of case mix associated with the increased number and different needs of the VA patient population. The project would support the Joint Strategic Plan and the President's Management Agenda.

**Other Supporting Information:**

**Impact on waiting times or access:** Access to inpatient care in the STVHCS and WHMC would be improved with implementation of this initiative.

**Impact on quality of care:** Although patients receive quality care in the private sector hospitals, continuity of care is disrupted. An onsite STVHCS utilization management clinician will be able to provide the necessary statistics for VA reporting requirements and more importantly to ensure the VA standard of care is evident.

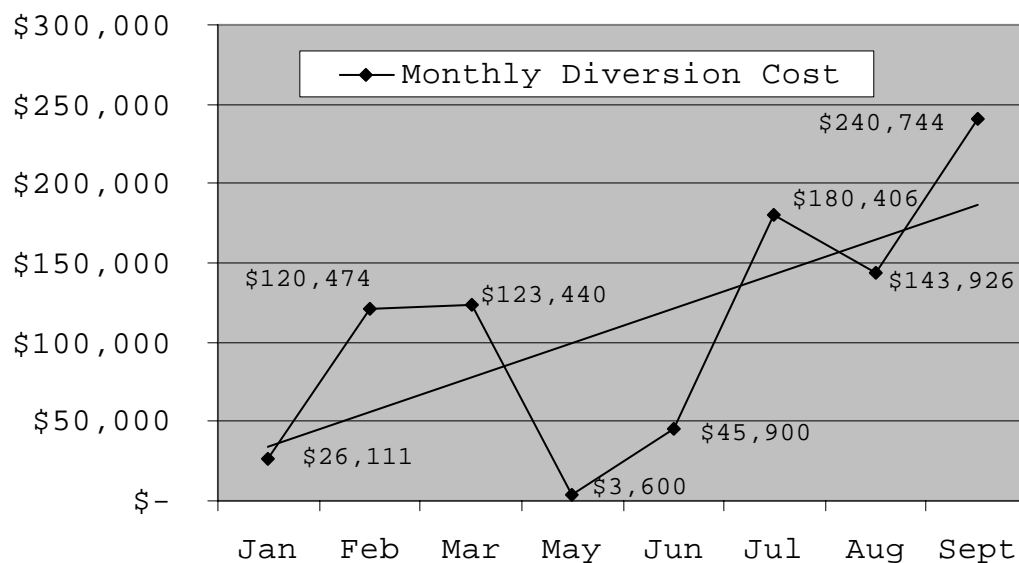
**IMPACT OF CAPITAL ASSET REALIGNMENT:** Along with the recommendation from the draft CARES Plan to contract beds for the Lower Valley, this project will allow Audie L. Murphy Division of the STVHCS to relieve some of the pressure of constrained bed space as identified in CARES projections.

**Metrics:** The following metrics would be used to evaluate the ICU initiative:

- Utilization of bed days of care
- Patient satisfaction
- Employee satisfaction
- Diversion rates
- South Texas Veterans Health Care System costs of diversion
- Actual costs of nursing salaries and benefits
- Reconciliation of the sharing agreement

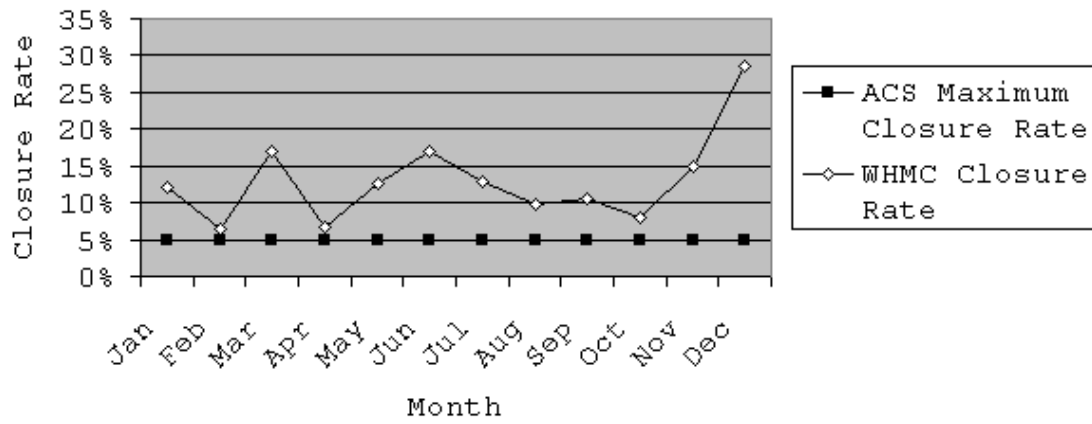
**MILESTONES:** See Milestones/Schedule of Activities (see Appendix D)

Attachment 1. Estimated Diversion Cost for  
STVHCS in CY 03





Attachment 2: Estimated Bed Closures for WHMC in CY 2003



Appendix F. Incentive Fund Workload Forecasts

Attachment 3: Business Case Analysis Format

Incentive Fund Application Workload Forecasts

VA and DoD

Admissions To ICU*	Initial Yr	2nd Yr	3rd Yr	4th Yr	Total
ICU	438	438	438	438	1,752
TOTAL	438	438	438	438	1,752

Assumptions:

\*6 beds x 85% occupancy = 5.1 occupied beds x 365 days = 1862  
annual bed days of care / 4.2 days average length of stay =  
438 admissions per year

\* Both VA and DoD patients would utilize the ICU.

\* It is projected that VA would use approximately 997 bed  
days of care per year including both ICU and non-ICU beds.

STVHCS personnel costs	\$ 1,495,698
Divided by average cost per day day of care	\$ 1,500
Projected Total Bed Days of Care	\$ 997

## Appendix G. Comparison of Personnel Requirements Based on Two Models

## Attachment 2: Business Case Analysis Format

*Initiative Title: Joint VA/DoD ICU Project with STVHCS Staffing Model*

	Initial Year		2nd Year		3rd Year		4th Year	
POSITION	FTEE	ANNUAL SALARY*	FTEE	ANNUAL SALARY*	FTEE	ANNUAL SALARY*	FTEE	ANNUAL SALARY*
ICU Nurse Manager (STVHCS)	1	\$77,782	1	\$80,116	1	\$82,519	1	\$84,995
ICU RN staff (STVHCS)	20	\$1,311,156	20	\$1,350,491	20	\$1,391,005	20	\$1,432,736
GS-6 Patient Services Assistants (STVHCS)	1	\$41,202	1	\$42,880	1	\$44,564	1	\$46,346
Utilization Manager (STVHCS)	1	\$65,558	1	\$68,180	1	\$70,907	1	\$73,744
TOTAL:	23	\$1,495,698	23	\$1,541,667	23	\$1,588,995	23	\$1,637,821

*Initiative Title: Joint VA/DoD ICU Project with WHMC Staffing Model*

	Initial Year		2nd Year		3rd Year		4th Year	
POSITION	FTEE	ANNUAL SALARY*	FTEE	ANNUAL SALARY*	FTEE	ANNUAL SALARY*	FTEE	ANNUAL SALARY*
ICU Nurse Manager (STVHCS)	1	\$77,782	1	\$80,116	1	\$82,519	1	\$84,995
ICU RN staff (STVHCS)	14	\$917,809	14	\$945,343	14	\$973,704	14	\$1,002,915
ICU LVN staff (STHVCS)	15	\$614,571	15	\$633,008	15	\$651,999	15	\$671,559
GS-6 Patient Services Assistants (STVHCS)	1	\$41,202	1	\$42,880	1	\$44,564	1	\$46,346
Utilization Manager (STVHCS)	1	\$65,558	1	\$68,180	1	\$70,907	1	\$73,744
TOTAL:	32	\$1,716,923	32	\$1,769,528	32	\$1,823,693	32	\$1,879,558

\* Includes benefits and fringes

# Appendix H. Comparison of Models for Staffing of ICU Nurses

STVHCS Assumptions	WHMC Assumptions
The minimum patient to nurse ratio of 2 to 1 equates to a minimum of 3 nurses per shift.	The patient to nurse ratio of 2 to 1 equates to 3 nurses per shift.
High acuity of some patients in ICU requires 1 to 1 patient to nurse care; therefore, 4 nurses per shift are required.	The ICU is staffed with an equivalent number of LVNs as RNs.
One nurse manager would be needed in addition to the total RN FTE requirements.	The nurse manager is included in the total RN FTE requirements.

	STVHCS	WHMC
RNs per shift	4	3
X 3 shifts per day	12	9
X 7 days per week	84	63
X 8 hours per shift	672	504
FTEs per week	16.8	12.6
Leave and training	20%	20%
Total RN FTE	20	15
LVNs per shift		3
X 3 shifts per day		9
X 7 days per week		63
X 8 hours per shift		504
FTEs per week		12.6
Leave and training		20%
Total LVN FTE		15
Nurse manager FTE	1	0 *

\* For WHMC, 1 Nurse Manager is included in the total RN FTE.

## Appendix I. Incentive Fund Business Case Analysis Financial Worksheet

*NON-CUMULATIVE ANNUAL DATA*

REVENUE	FY 2005	FY 2006	FY 2007	FY 2008	4 Year Total
VA/DoD sharing offsets			1,588,996	1,637,820	\$3,226,816
3rd party collections	687,000	675,020	662,058	648,694	\$2,672,772
Incentive fund	2,365,975	1,819,528	0	0	\$4,185,503
Other (List)	0	0	0	0	\$0
Total Estimated Revenue	\$3,052,975	\$2,494,548	\$2,251,054	\$2,286,514	\$10,085,091
Total Revenue	\$3,052,975	\$2,494,548	\$2,251,054	\$2,286,514	\$10,085,091

*NON-CUMULATIVE ANNUAL DATA*

RECURRING EXPENSE (List)	FY 2005	FY 2006	FY 2007	FY 2008	4 Year Total
Personnel	1,495,698	1,541,666	1,588,996	1,637,820	\$6,264,181
Supplies	317,458	328,569	340,069	351,971	\$1,338,067
Pharmacy	24,594	27,078	29,813	32,824	\$114,309
Other (List)	1,015,164	258,987	258,987	258,987	\$1,792,125
Ambulance contract	50,000	50,000	50,000	50,000	\$200,000
VA contract hospitalization	965,164	208,987	208,987	208,987	\$1,592,125
Total Recurring Expense	\$2,852,914	\$2,156,300	\$2,217,865	\$2,281,602	\$9,508,682

*NON-CUMULATIVE ANNUAL DATA*

NON-RECURRING EXPENSE (List)	FY 2005	FY 2006	FY 2007	FY 2008	4 Year Total
Capital Equipment	257,000	0	0	0	\$257,000
Capital lease	\$0	\$0	\$0	\$0	\$0
Non-Recurring Maintenance	\$0	\$0	\$0	\$0	\$0
Minor Construction* (List)	\$0	\$0	\$0	\$0	\$0
Other (List)	\$0	\$0	\$0	\$0	\$0
Total Non-Recurring Expense	\$257,000	\$0	\$0	\$0	\$257,000
Total Projected Expense	\$3,109,914	\$2,156,300	\$2,217,865	\$2,281,602	\$9,765,682
REVENUE vs. EXPENSES	(\$56,939)	\$338,248	\$33,189	\$4,912	\$319,409